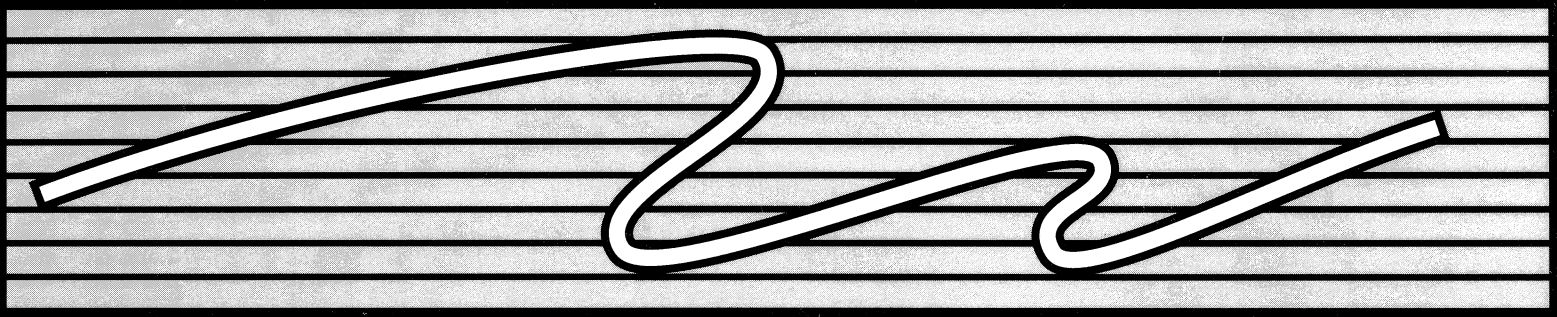
Midibase™

MIDI PROGRAMMABLE
DIGITAL BASS MODULE



USER'S GUIDE

PEAVEY®

WARNING: *TO PREVENT ELECTRICAL SHOCK OR FIRE HAZARD, DO NOT EXPOSE THIS APPLIANCE TO RAIN OR MOISTURE. BEFORE USING THIS APPLIANCE, READ THE OPERATING GUIDE FOR FURTHER WARNINGS.*

CAUTION: *Risks of electrical shock -* ***DO NOT OPEN.***

CAUTION: *To reduce the risk of electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.*

Intended to alert the user to the presence of uninsulated "dangerous voltage" within the product's enclosure that may be of sufficient magnitude to constitute a risk of electric shock to persons.

Intended to alert the user to the presence of important operating and maintenance (servicing) instructions in the literature accompanying the product.

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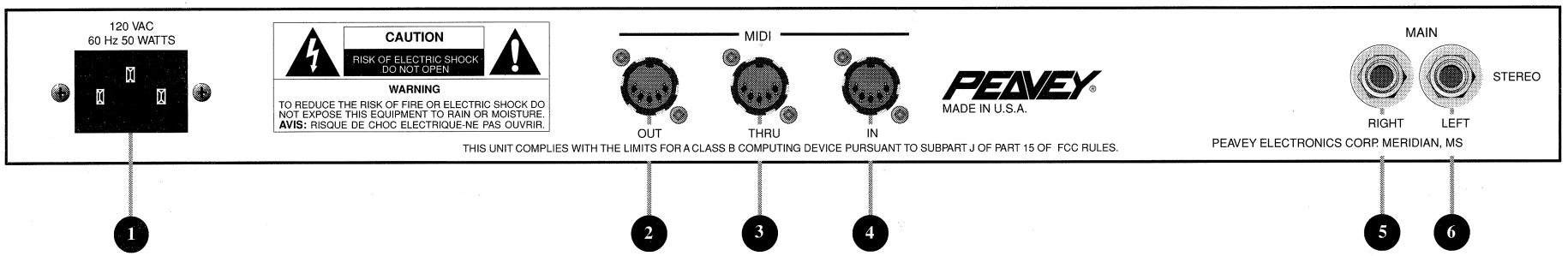
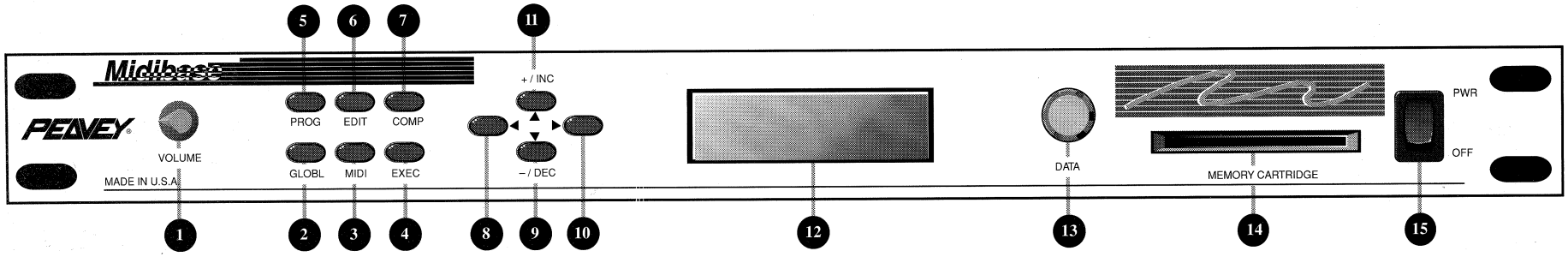


Back Panel Layout

1. **Line Cord (120 V Products only)**
   For your safety, we have incorporated a 3-wire lines (mains) cable with proper grounding facilities. It is not advisable to remove the ground pin under any circumstances. If it is necessary to use the equipment without proper grounding facilities, suitable grounding adaptors should be used. Greatly reduced shock hazard exists when the unit is operated with the proper grounded receptacles.
2. **MIDI Output Jack**
   Standard 5-pin DIN jack used for sending MIDI data from the Midibase Voice Module to the receiving unit(s).
3. **MIDI Thru Jack**
   Standard 5-pin DIN jack used for sending MIDI data from the sending unit through the Midibase Voice Module to another MIDI unit, that unit will receive an exact copy of the MIDI data at the input jack.
4. **MIDI Input Jack**
   Standard 5-pin DIN jack used for receiving MIDI data from the sending unit to the Midibase Voice Module.
5. **1/4″ Mono Output Jack**
6. **1/4″ Stereo Output Jack**



Front Panel Layout

1. **Volume Control**
2. **GLOBL Master Button**
   Provides access to the Global parameters.
3. **MIDI Master Button**
   Provides access to the MIDI parameters.
4. **EXEC Master Button**
   Used to Execute commands, such as Save, Copy, Start/Stop etc.
5. **PROG Master Button**
   Provides access to the Programs.
6. **EDIT Master Button**
   Provides access to enable Editing of the program parameters.
7. **COMP Master Button**
   Allows the user to Compare an edited program to the original.
8. **Left Arrow Button**
   This is used to move left on the display.
9. **-/Dec Button**
   This is used to decrement data values.
10. **Right Arrow Button**
    This is used to move right on the display.
11. **+/Inc Button**
    This is used to increment data values.
12. **20 x 2 LCD Display**
13. **Data Control Knob**
    This knob may be used with or instead of the arrow buttons to edit data.
14. **Memory Cartridge Slot**
    This is used to expand the number of programs (from 300 to 500), load programs into memory, and copy programs from memory.
15. **Power Switch**

Midibase™
Voice Module

CHAPTER 1: INTRODUCTION

Congratulations on your purchase of the Midibase™ Voice Module. The Midibase Voice Module will give you many years of enjoyment, not just because of the features it offers today, but because it uses general-purpose Digital Signal Processing (DSP) chips to perform all sound generation and modification. Because the Midibase Voice Module doesn't take the traditional approach of using custom chips dedicated to a particular type of sound generation, it can be reprogrammed via software updates to provide alternate types of sound generation. Furthermore, new sound programs can be loaded in to increase the Midibase's existing capabilities.

Highlights of the current configuration include:

- 500 programs available at all times: three on-board banks of 100 fully user editable programs and 200 programs from ROM (preset, non-editable) cartridge or RAM editable catridge.
- Multi-timbral MIDI operation so that a single Midibase Voice Module can provide up to 16 different sounds simultaneously.
- 16 note polyphony, single oscillator voice structure.
- A stereo pair of audio outputs.
- Four Megabytes of 16-bit PCM wave samples, including both acoustic and electronic instrument sounds (same as the Midibase guitar, DPM® 3, and DPM® V3).
- 10 completely user programmable Drum Kits.
- A 24 bit Dual Effects processor with 39 programmable algorithms.

...and much more, which you'll find out about as you read this manual.

Before doing anything else, send in your warranty registration. This will allow Peavey to advise you of any future updates that will enhance the unit's operation.

1.1 ABOUT THIS MANUAL

This manual is divided into seven main chapters:

1. **Introduction**. This section shows you how to make some great sounds right out of the box.
2. **Modifying existing setups and sounds**. After you become familiar with the Midibase Voice Module, you may want to change some of the most-used parameters such as pitch wheel bend range or various MIDI parameters. This section covers the most important programming options. The first two chapters will be the only information some musicians will need.
3. **Programming the Midibase Voice Module**. For those who want to

create their own sounds, this presents the basics of sound programming as well as a reference section of all the available programming parameters.

4. **Programming the signal processors**. This includes details on programming the on-board signal processors so that you can optimize your sounds.
5. **Programming drum kits**. The Midibase Voice Module offers a full complement of drum sounds and can serve as a drum expander module for sequencers.
6. **Advanced applications**. This offers information on making the best use of the outputs, advanced programming techniques, and more.
7. **MIDI supplement**. It is important to know the basics of the MIDI specification to make the best use of the Midibase's MIDI features. If you are not very familiar with MIDI, please read the MIDI supplement before proceeding.

1.2 TUTORIAL AND SETUP

1.2.a Cable Setup

1. Unpack the Midibase Voice Module. Save all packing materials in case the unit needs to be shipped for updating or servicing.
2. Plug the female end of the line cord into the matching socket on the rear of the Midibase Voice Module.
3. With *all devices in your system turned off* and the volume controls turned down, hook up the outputs according to your particular needs, as described below.

1.2.b To Start the Demo Sequence

1. Run a mono cord from either the left or right Main output to your amplifier, or connect two mono cords from the left and right Main outputs to a stereo amp or two mixer inputs, or use a stereo cord from the left output (marked STEREO).
2. Turn on (in this order) the Midibase Voice Module, mixer (if present), and amplification system. Turn the volume controls up part way; turn them up to normal volume once you're satisfied that the system is working properly.
3. Press the **GLOBL** button (toward the lower left corner) once.
4. Press and hold the **+/INC** button until the display stops changing.
5. The display says **DEMO** Sequence **START**. Press the **EXEC** button to start the sequence.
6. Press the **EXEC** button again to stop the sequence.

1.2.c Live Use with a MIDI Keyboard or Other Controller

Most live applications involve stereo or mono outputs and a master MIDI guitar or other MIDI controller (MIDI drums, etc.). The guitar will usually send data in poly mode (all data is sent over one channel). Refer to the MIDI supplement if you are confused about the difference between individual MIDI modes.

Audio: Referring to the figure below, plug the Main left and right outputs into a suitable amplification system or mixer. You have three main options, one mono and two stereo.

- *Option 1*, Mono: Run a mono cord from either the left or right Main output to your amplifier.
- *Option 2*, Stereo: Connect two mono cords from the left and right Main outputs to a stereo amp or two mixer inputs. If you need a guitar mixer, Peavey makes the PLM™ 8128 and the Linemix™ 8, a standard, lower- cost eight-input line mixer.
- *Option 3*, Stereo: Connect a stereo cord (*i.e.*, with tip, ring, and sleeve connections) from the left Main output (the one labeled **STEREO**- important!) to a matching stereo connector in your amplifier or mixer.

MIDI: Run a MIDI cable from the controller's MIDI Out to the Midibase Voice Module's MIDI In. To drive additional tone modules from the same guitar, patch the Midibase Voice Module MIDI Thru output to the next tone module's MIDI In. Patch the second module's MIDI Thru into an additional module's MIDI In, and so on.

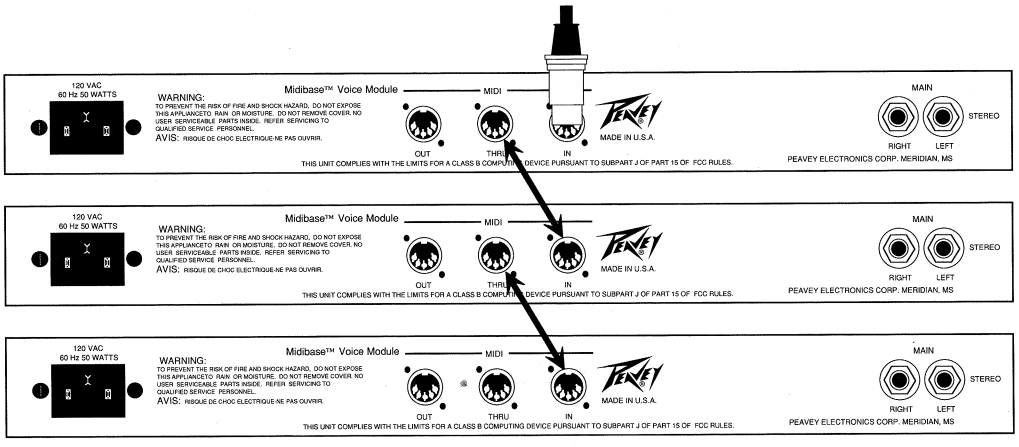


Figure 2

Caution: Do not attempt to connect more than four units together using thru connections as this may cause you to lose MIDI data. (see figure above)

1.2.d Studio Use with a Sequencer

In many studio applications, the Midibase Voice Module will serve as a multi-timbral sound expander module. Most sequencers are capable of generating data over several channels; the Midibase Voice Module can be programmed so that individual programs play sequenced data from specific channels.

Audio: Multi-timbral operation is a bit more complicated. A program, which has an output signal, can be assigned to the two output jacks on the rear of the Midibase Voice Module. This is done by changing the pan parameter on the output page of the edit menus. A value of +99 pans full right, the program/signal comes out the right output jack, a value of 00 lets the program/signal play equally through both output jacks, while a value of -99 pans full left and the program/signal will play through the left output jack. The pan parameter is further explained in section 3.9. Up to four programs/signals may be played through each output jack. Note, however, that only the output jack marked stereo will produce a stereo output as long as a stereo plug is used. If a mono plug is used in the output jack marked stereo you will hear the left image of the output. The jack marked right is a mono jack that will output the right image of the output.
MIDI: Run a MIDI cable from the sequencer's MIDI Out to the Midibase's MIDI In. To drive additional tone modules from the same sequencer, patch the Midibase Voice Module MIDI Thru output to the next tone module's MIDI In. Patch the second module's thru into an additional module's MIDI In, and so on.

1.2.e Powering Up

Turn on your equipment in the following order (this is good practice for any MIDI/audio setup, not just the Midibase Voice Module):

- Computer or sequencer (if present)
- Synthesizers, sound generators, and signal processors
- Mixer (with master outputs turned all the way down!)
- Amplification system

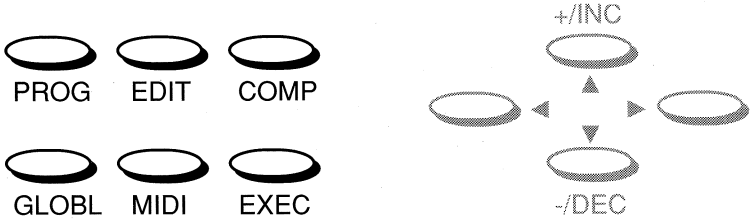
Turn up the mixer master output controls to a low level as you test out the system. Turn up to normal volume once you're satisfied that the system is working properly.

1.3 GETTING AROUND THE Midibase Voice Module: THE FRONT PANEL

Now that the connections are made, it's time to match the Midibase guitar to your particular setup. This involves a bit of programming,

such as setting MIDI channels and the like. First we'll explain basic Midibase Voice Module programming protocols.

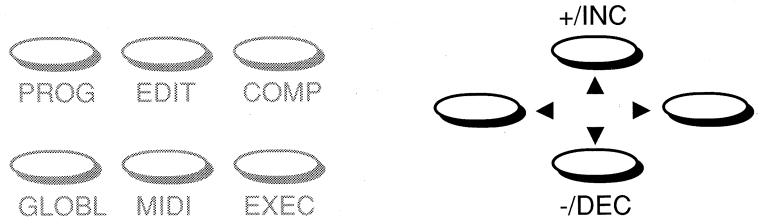
There are four main programming tools:



• 6 master buttons (**Prog, Edit, Comp, Globl, MIDI, Exec**). These select different programming *menus* except for Exec, which generally is like the "enter" or "return" button on a computer. In some cases, the Midibase's display (see below) will ask you to press the Exec button after you've finished making your parameter selections.

When in the Edit or Prog menus, the Exec button provides a different function. Pressing Exec plays a middle C for as long as you depress the key. This allows you to trigger a note in the Midibase Voice Module without having to reach over and play a keyboard or other controller.

• 4 parameter control buttons (**Left, Right, Up**, and **Down** arrow buttons; the Up and Down arrows are also called Inc/Dec buttons respectively). After selecting a menu, these let you navigate around the menus.



About Up/Down buttons. The Up/Down buttons serve two major functions. When no parameters are flashing, the Up/Down buttons select different *pages* within a menu (*example*, the Global menu has nine separate pages, each of which affects a particular aspect of the Midibase's overall operation). When a parameter is flashing on a given page, the Up/Down buttons set the parameter's value.

Holding down an Up/Down button will scroll through values or pages at a particular rate. To increase the rate, press and hold the button for the direction you want to scroll (up or down); while holding down this button press and hold the other button.

Example: If you want to scroll up, first press and hold the up button and then, while holding the up, button press and hold the *down* button until the page or parameter you want is displayed. This "fast scrolling" option is very handy when a parameter is set at, say, -99 and you want to move up to +99.

About Left/Right buttons. The Left/Right buttons select the parameter to be edited for a given page. Once you cursor past the left-most or right-most parameter, no parameters will flash (meaning the +/Inc and -/Dec buttons will select a different page). However, pressing the Right/Left button again will start going through the parameters again, from left to right or right to left, respectively.

Short cut: To instantly set a page to the non-flashing status so you can select another page, press the appropriate Master button (*e.g.*, if you've modified a parameter in the Global menu and want to select another page, press the **GLOBL** button). The modified parameter will stop flashing, be automatically stored, and you can then select a different page.

Notes: Once you have selected a particular menu (Edit, Globl, MIDI) you can change pages within the menu without having to re-press the menu's master button.

To **quit** the programming process at any time, press the Right/Left arrow until none of the parameters flash, then select a new page. Or, hit one of the six Master buttons at any time to choose a different menu.

Two-line Liquid Crystal Display (LCD). This shows what's going on inside the Midibase Voice Module. When playing, the display shows the current program and the number of voices and program type (combi or single) in use at any given moment.

Continuously variable data knob. This duplicates the function of the Up/Down buttons, but sometimes changing values is easier or faster to do by turning a knob. If you hold down a cursor button while turning the knob, the knob will control the cursor position.

Definition: When we talk about "selecting" a parameter during the editing process, it means that you can use either the Up/Down button or Data knob to select a particular parameter to be edited.

Other front panel controls and features are:

Volume control. This sets the master volume for the entire unit. Individual programs can also have their own individually prgrammed volumes, controlled by this master control.

Note: This is a "hardware" volume control and does not transmit MIDI volume changes; however, the Midibase Voice Module *will* receive MIDI volume.

Memory cartridge slot. Peavey and other manufacturers offer alternate programs for the Midibase Voice Module in cartridge form. Blank cartridges, such as the Peavey Cache Card™ (part #0071023), are available for saving your own programs and Midibase Voice Module setups to cartridge.

1.4 ABOUT DYNAMIC ALLOCATION

The Midibase Voice Module can play up to 16 voices at a time.

If 16 voices are playing (or sustaining) and you play a new key, this will "steal" a note using a proprietary algorithm for voice steal.

Combi programs produce thicker sounds by using a combination of up to four programs. While this produces thicker sounds, it will also limit the number of notes you can play before a note is "stolen." This means that a program with only one note, such as the drum kits, can play 16 notes. Now, a drum kit is not a combi program, but it served as a good example of a program that can play all 16 notes. However, a combi program, which can consist of 2 to 4 programs or "layers", changes the number of notes that can be played before one is stolen. A 2 layer combi program can play 8 notes before one is stolen. This is because the Midibase Voice Module plays up to 16 notes at one time, and layering causes those notes to be divided evenly between the number of layers or programs that are linked to the combi program. A combi program with 3 layers will allow 5 notes to be played before one is stolen, while a combi program with 4 layers will play 4 notes before one is stolen. (For more information on combi programs see section 3.11.)

CHAPTER 2: MODIFYING EXISTING PARAMETERS

Here are some of the most common modifications for customizing the Midibase Voice Module. This does not cover all the Midibase Voice Module has to offer; see Chapter 3 for detailed programming information.

Important: Any changes made to the factory patches shipped with the unit will, if you saved those changes, be remembered by the Midibase Voice Module.

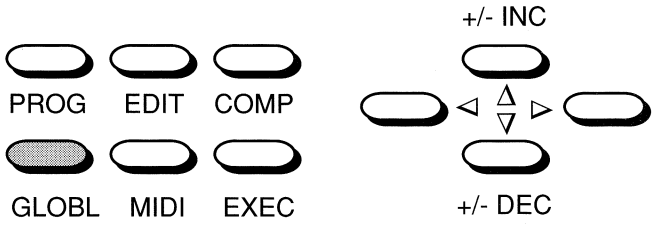
2.1 GLOBAL MENU

The following options are accessible under the Global menu. Any edits made in the Global or MIDI menu are remembered; the next time you turn on the Midibase Voice Module, any changes made to these menus will be retained, even if memory protect is on.

Note: When Memory protect is on, programs other than those in the Global or MIDI menus may be edited but you cannot store the results of these edits. When Memory protect is off, the program data you have edited is saved. See section 2.1.d for more detailed information about this feature.

The general protocol for making a change is:

1. Press the **GLOBL** master button. (This is not necessary if you are already in the Global menu.)



2. **Select** the desired page.
3. Use the **Right/Left** buttons to choose the parameter to be modified.
4. Select the parameter value.

2.1.a Master Tuning ***(-99 to +99 cents)***

This allows you to tune the Midibase Voice Module to other instruments not tuned to concert pitch, A=440 Hz.
Note: When the Tune parameter is set to zero then the Midibase Voice Module is set to concert pitch or A=440 Hz.

1. Select the GLOBAL Tune/VelCurve page.

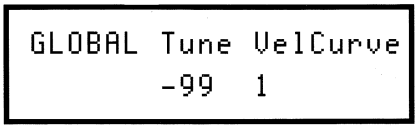
2. Press the **Right/Left** arrow until the Tune parameter flashes.
3. Select the desired tuning offset.

Note: Most of the time tuning will be performed by ear, although a tuning instrument may be used.

2.1.b CrV (1, 2, or 3)

This matches the Midibase Voice Module to your playing style.

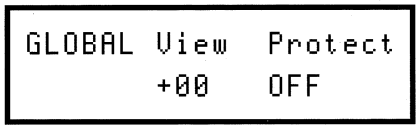
1. Select the GLOBAL Tune/VelCurve page.



2. Press the **Right/Left** arrow until the VelCurve parameter flashes.
3. Select the desired "feel": **1** (matches the Midibase guitar keyboard exactly), **2** (exponential–wide range velocity response), and **3** (linear–somewhat more "compressed" velocity response).

2.1.c Display Viewing Angle (-03 to +04)

The display is easier to read at some angles than at others. This adjusts the display for the best contrast for your particular viewing angle.
1. Select the GLOBAL View/Protect page.



2. Press the **Right/Left** arrow until the View parameter flashes.
3. Select the desired viewing angle. 0 works best for straight-on viewing. More negative numbers optimize the viewing angle if you're looking at the Midibase Voice Module from below; more positive numbers optimize the viewing angle if you're looking at the Midibase Voice Module from above.

2.1.d Memory Protect (Off or On)

With memory protect on, program parameters may be edited but you cannot store the results of these edits. When off, you can edit and then save a program to retain the results of your edits.

1. Select the GLOBAL View/Protect page.
2. Press the **Right/Left** arrow until the Protect parameter flashes.
3. Select **OFF** or **ON**, with the Inc/Dec buttons.

It's worth mentioning again that **MIDI** and **Global** parameters are always remembered and are not affected by the Memory Protect

status. Memory Protect affects the programs (internal and cartridge) only.

2.1.e Cartridge Memory Management

The Midibase's internal memory is divided into three banks of 100 programs each. Bank data can be saved to the cartridge, or cartridge data may be loaded into the banks. This menu also lets you initialize a cartridge. Think of initializing as drawing the "parking lot lines" into which you "park" your programs.

1. Select the **COPY** Task page.

```
COPY Select Block
     ALL PRGS
```

2. Press the **Right/Left** arrow until the lower line flashes.
3. Use the **Up/Down** buttons to select from the following choices:

System copy functions:

ALL PROGS Copies the programs to MIDI only.
ALL KITS Copies the drum kits to MIDI only.
GLBL DTA Copies the global data to MIDI only.
ALL DATA Copies all data to MIDI only.
PROGS Copies the program data from the selected source bank to the selected destination bank.

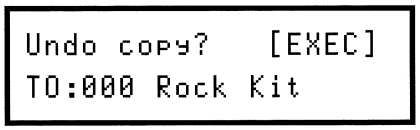
Parameter copy functions:

OSC Copies the oscillator parameters from one program to another.
Filter Copies the filter parameters from one program to another.
Ptch Env Copies the pitch envelope parameters from one program to another.
Fltr Env Copies the filter envelope parameters from one program to another.
Amp Env Copies the amplitude envelope parameters from one program to another.
LFO Copies the LFO parameters from one program to another.
Output Copies the output parameters from one program to another.
≈**Combi** Copies the Combi parameters from one program to another.
Effects Copies the Effects parameters from one program to another.
Drum Kit Copies the Drum Kit parameters from one program to another.
MBSETUP1 Copies the Midibase Voice Module setup number 1 to another, MBSETUP, CART, or MIDI.

MBSETUP2 Copies the Midibase Voice Module setup number 2 to another, MBSETUP, CART, or MIDI.
MBSETUP3 Copies the Midibase Voice Module setup number 3 to another, MBSETUP, CART, or MIDI.
MBSETUP4 Copies the Midibase Voice Module setup number 4 to another, MBSETUP, CART, or MIDI.
CRTSETUP Copies from MBSETUP 1-4 to cartridge.
INIT CART Initializes a cartridge to accept program and MBSETUP data. ROM cartridges canno be formatted.

Note: By copying data to MIDI only, you are actually copying the data to a device that accepts MIDI data and can store it, such as the Peavey MIDI Streamer™.

4. After selecting the desired option, press the **Exec** master button. The **[EXEC]** in the display's upper right corner is there to remind you that you must press **Exec** to finalize the selection process.
5. After pressing the **Exec** button the following will appear on the display, giving you the option to **UNDO** the copy function that has been specified.



To "undo" the destination program to its original, pre-copied parameters, press the **EXEC** button. To return to the new version, press the **EXEC** button again. You can toggle between the new and old versions by pressing the **EXEC** button. If you press the **UNDO** soft button and select a different copy function, you can no longer invoke the **UNDO** and the copy will be complete.

Note: Because the new version of the destination program is only in the edit buffer, to save the parameters you must save the program. (see section 2.3.a)

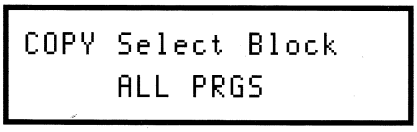
2.1.f MIDI Bulk Dump

Although the Midibase Voice Module's memory is non-volatile (*i.e.*, it is battery-backed up to prevent loss of data while the unit is turned off), accidents can happen, from a battery going bad to operator error (Ooops! Didn't mean to load the cartridge data into Bank 1 after all...). As a result, it's a good idea to save your data periodically.

When you become sufficiently familiar with the Midibase Voice Module's programming options to make up sets of your own sounds, these should also be saved.

To save system exclusive data via MIDI:

1. Connect a MIDI cable from the Midibase Voice Module's MIDI Out to the MIDI system exclusive storage device's MIDI In.
2. Set up your MIDI system exclusive storage device to record system exclusive data. Refer to the product's manual to find out how to do this.
3. Select the Midibase Voice Module's **COPY Select Block** page.



4. Press the **Right/Left** arrow button until the bottom line flashes.
5. Select the type of data to be saved.
6. After selecting the data type to be saved, press the **Inc.** button. This takes you to the next window; press the **EXEC** master but ton. Note the **[EXEC]** in the display's upper right corner, indicating that you must press Exec to finalize the selection process.

7. The receiving unit should somehow show that it is receiving MIDI data. Dumping all data takes a little over 30 seconds, so don't get impatient.

If you cannot save all data via MIDI, it's possible that the system exclusive receiver doesn't have sufficient memory to save a 101.2K file although the MIDI Librarian is able to save a file of this size. Check the receiving unit's manual for further information on maximum file size, and try saving each bank of 100 programs individually (most units should be able to cope with a dump of 47.6K).

Note: Any data saved via MIDI is considered System Exclusive and "tagged" with the manufacturer's I.D., unit type, and any other information the manufacturer wants to include. Saving data via System Exclusive means that only units with matching system exclusive i.d.'s will exchange system exclusive data.

System Exclusive data includes:

ALL Program data
ALL Global data
ALL MIDI data
MBSETUPS 1-4
ANY Manufacturer specific information

System Exclusive <u>does not</u> include:
Program change information
Note On/Off information
ANY Controller information
ANY Industry standard information

To receive system exclusive data via MIDI:

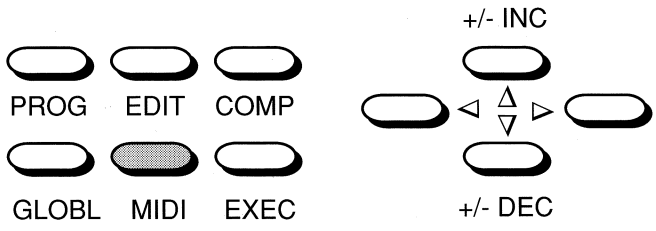
1. Connect a MIDI cable from the MIDI system exclusive storage device's MIDI Out to the Midibase Voice Module's MIDI In.
2. Set up your MIDI system exclusive storage device to transmit system exclusive data. Refer to the product's manual for instructions. Make sure that the Midibase Voice Module data you previously saved is loaded into the system exclusive storage device so it can be sent to the Midibase Voice Module.
3. Initiate transmission at the system exclusive storage device. You need not set anything at the Midibase Voice Module; it will automatically load the data being sent to it.

Note: Because many sequencers can now record system exclusive information as part of a sequence, you may want to record any data used for a particular song at the head of a sequence.
The other Global options involve microtunings and drum kit setup and selection. These are described in detail in section 6.4 and Chapter 5, respectively.

2.2 MIDI MENU

All of the following are accessible under the MIDI menu. Any edits made in the Global or MIDI menu are remembered; the next time you turn on the Midibase Voice Module, any changes made to these menus will be retained, even if Memory Protect (see section 2.1.d) is on. The general protocol is:

1. Press the **MIDI** master button. This is not necessary if you are already in the MIDI menu.

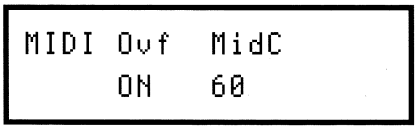


2. Select the desired page.
3. Use the **Right/Left** buttons to choose the parameter to be modi fied.
4. Select the parameter value.

2.2.a Set Middle C (36 to 84)

You can offset Middle C to any note within the MIDI note range of 36 to 84 (60 is the default for middle C). Think of this as a "global transposition" option.

1. Select the MIDI **Ovf/MidC** page. This is the Overflow/Middle C page.



2. Press the **Right/Left** arrow until the **MidC** parameter flashes.
3. Select the desired amount of transposition.
4. Select the number of channels.

Note: Ovf means overflow. This allows any notes beyond the sixteen to be played by another unit without "stealing" occurring.

2.2.b Filter Out MIDI Data

In some cases the MIDI device driving the Midibase Voice Module may generate data that you don't want the Midibase Voice Module to receive. *Example:* You might want to ignore program changes if you're adjusting a particular patch: A program change would force the Midibase Voice Module to a different patch, and you would lose the results of your edits. This option lets you filter out a variety of MIDI commands.

1. Select the MIDI **Filter/Stat** page.

2. Press the **Right/Left** arrow until the Filter parameter flashes.
3. Select the MIDI data to be either ignored or received:

SYSTEMX System Exclusive data
VOLUME Volume data (Controller 7)
PROGRAMS Program changes
SUSTAIN Sustain pedal (Controller 64) and Hold 2 (Controller 69).
PRESSURE Pressure (also called aftertouch)
PWHEEL Pitch wheel (pitch bend)
MODWHEEL Modulation wheel (Controller 1)
ALL OFF Allows the Midibase Voice Module to ignore MIDI "All Off" messages sent by a few manufacturers.
4. After selecting the desired parameter, press the **Right** arrow button until the **Stat** (Status) parameter flashes.
5. Select **IGNOR** (corresponding data will be ignored) **or RECEV**

(corresponding data will be received).

Note: Each parameter must be individually set to IGNOR or RECEV. Also, some master keyboards assign the footpedal to controller 7, reasoning that it will be used as a volume pedal. If you have problems ignoring pedal information, this might be the cause.

Note: At this time you are only using stored programs and assigning them to a Multi setup. The Edit buffer is not accessible through a Multi setup.

Midibase Voice Module Multi Mode:

In order to support the Midibase™ bass guitar, the Midibase voice module has a special MULTI setup mode which allows for playing of four or six consecutive MIDI channels. Notes and controller events sent from the Midibase bass guitar will affect only the program playing on the corresponding channel. Program changes, however, are handled in a different manner. Program changes received on the base channel will initiate an internal program change to all channels starting with the base channel and continuing for as many channels as the user has selected in the MIDI #Chan field (4 or 6). Program changes received on channels other than the base channel but not outside the range of base channel thru base channel + #Chan (4 thru 4+3) WILL SELECT A NEW PATCH ON THAT CHANNEL ONLY. Program changes received on channels outside the range of base channel thru base channel + MIDI #Chan are ignored.

As an example, assume the base MIDI channel is set to 4. The MIDI #Chan field is also set to 4 and the unit is in MULTI mode. A program change with a value of 27 is received on channel 4. As a result, the first four parts of the MULTI (those patches playing on channels 4-7) are all set to patch 27. Incoming notes on channels 4-7 will now play patch 27. Next a program change message specifying patch #30 is received on channel 5. The patches assigned to channels 4,6, and 7 do not change. The patch assigned to channel 5, however, changes to patch 30. Notes sent on channel 5 will now play patch 30. A program change message is received on channel 16. What happens? Right, it is outside the range of channel 4-7 and is ignored!

2.2.c Almost There!

1. You're almost ready to play either your Midibase or sequencer and hear the Midibase Voice Module in action. Press the **Prog** master button.
2. The display will show the last program selected (in a "virgin" Midibase Voice Module, program 000).
3. The Midibase Voice Module display will show an eighth note for each

voice in use as you play, thus confirming that the Midibase Voice Module is receiving and understanding MIDI data. Each voice in use is shown on the display as an eighth note. This makes it easy to see how many voices are available, which is useful with sequencer driven multi-timbral setups since they tend to use up lots of voices. If no notes show up in the display:

- Check your cabling.
- Check the MIDI channel assignments on your sequencer/master controller and the Midibase Voice Module.

If you don't hear any audio:

- Make sure you're using the correct output connections. Try different outputs if the problem persists.
- Check that the amplifier is on and the mixer volume turned up.
- Make sure the Midibase Voice Module's front panel volume control is turned up.
- Make sure the sequencer hasn't sent a MIDI volume of zero (0).

4. Audition various programs by selecting the page and changing programs.

Now that things are up and running, check out the programs that come with the Midibase Voice Module. They've been developed by musicians specifically for the Midibase Voice Module.

2.2.d MIDI Program Change Map

You may not want a one-to-one correspondence between program changes generated by your master keyboard (or sequencer) and the Midibase Voice Module. *Example:* You might want program change 1 on your keyboard to select program 37 on the Midibase Voice Module.

Furthermore, the MIDI specification provides for 127 programs, yet the Midibase Voice Module contains 300 programs. The program change map lets you map incoming MIDI program changes to any of Midibase Voice Module programs 000-299 (but not cartridge programs).

1. Select the **MIDI Prog Change Map** page.

2. When **OFF**, there is a one-to-one correspondence between pro gram changes and the Midibase Voice Module programs. To create a program change map, press the **Right/Left** arrow until the OFF

parameter flashes.

3. Select the **incoming MIDI program number** with the **Data knob** or **Up** arrow button. The left-most program number pa rameter will flash; this is the incoming MIDI program number.

```
MIDI Prog Change Map
     000 -> 000
```

4. Press the **Right** arrow again until the right-most program number parameter flashes. This is the Midibase Voice Module's target program to which the incoming program change will be assigned.
5. Select the **target program** to which the incoming program number will be mapped.
6. **Repeat** steps 2-5 until the program change map is complete.

2.2.e Initialize Program Change Map

To cancel all Program Change Map assignments and start over from scratch (*i.e.*, the Program Change Map will show a one-to-one correspondence between program changes generated by your master keyboard and the Midibase Voice Module), follow steps 1-3 in the previous section but scroll all the way past incoming program 127. The display says:

```
MIDI Prog Change Map
   [EXEC] to Init
```

Press the **EXEC** master button, and the Map will be initialized, as confirmed by the display saying Function Complete.

2.2f Selecting a MBSETUP to overwrite

When the Midibase guitar dumps its setup information on of the internal MBSETUPs will need to be overwritten. This page is used to determine which MBSETUP will be overwritten. Since the Midibase guitar cannot dump it setups directly to cartridge it is necessary to use the Copy function to move an internal MBSETUP (1-4) to cartridge.

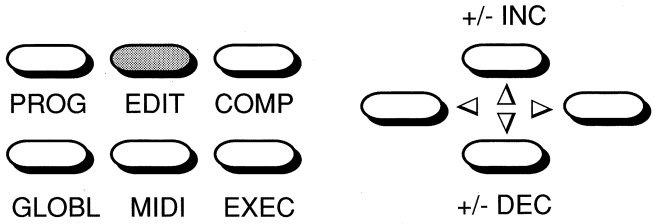
```
MIDI Current MBSETUP
     MBSETUP 1
```

2.3 EDIT MENU

The edit menu contains a wealth of commands for modifying the Midibase Voice Module's sounds or creating your own from scratch. The next chapter describes all the options and provides a tutorial on basic synthesis techniques, but here are some of the most common

adjustments. The general protocol is:

1. Press the **Edit** master button. (This is not necessary if you are already in the Edit menu.)



2. Select the desired page.
3. Use the **Right/Left** buttons to choose the parameter to be modi fied.
4. Select the parameter value.

Important: Any changes you make must be saved to the current program or a different one. Selecting a different program without saving the program you modified will cancel any edits you made.

2.3.a Save a Modified Program

1. After modifying the program, make sure that no parameters are flashing.
2. Press the **Up** arrow key (or do a couple turns of the data knob) until you reach the **Save to:** page of the Edit menu.

3. If you want to save to the program you just modified, select your program destination, press the **Exec** button. Note the **[EXEC]** in the display's upper right corner, indicating that you must press Exec to finalize the saving process.
4. To save to a different program number, press the **Right** arrow key. The program number will flash.
5. Select the **Program number** where you want to store the modified sound.
6. Press the **Exec** button.

Note: If the display says MEMORY Protected, memory protection must be turned off before you can save. Refer to section 2.1.d for more information on the memory protect function.

2.3.b Change Program Name

Renaming is handy to identify modified programs or ones you've created from scratch.

1. Press the **Prog** master button and select the desired program.
2. Press the **Edit** master button.
3. Press the **Right** arrow button. The first character will flash.
4. Select the new character.
5. Press the **Right** arrow button to select the next character to be changed.
6. Select the new character.
7. Repeat steps 5 and 6 until the name is complete.
8. Save the program if your other program edits are done.

Note: Characters available for naming are (in order of appearance as you turn the Data knob clockwise):

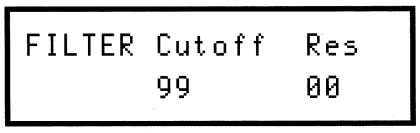
Upper and lower case alphabet

Space (blank)	0-9
+	-
=	(
)	*
&	^
%	$
#	@
!	-> (right arrow)
‘	{
}	[
]	| (vertical line)
‘ (single quote symbol)	:
;	?
/	, (comma)
. (period)	

2.3.c Change Overall Timbre (“Brighter/Duller”)

Although there are many ways to change timbre in the Midibase Voice Module, the following method is fast and takes care of many situations where you want to modify timbre.

1. Assuming you’re in the Edit menu, select the **FILTER Cutoff/Res** page.



2. Press the **Right** arrow button. The Cutoff parameter will flash.
3. **Increase** the value for a brighter sound; **decrease** for a duller sound.

2.3.d Increase/Decrease Timbre "Dynamics"

Sometimes the timbre responds dynamically over time, perhaps according to keyboard velocity or to the Midibase Voice Module's internal envelope generators. The Midibase Voice Module offers four different modulators (options that change dynamics) for the filter; this process involves editing one, the other, or both to create the desired effect.

1. Assuming you're in the Edit menu, select the **FILTER Keybd/Env** page.

```
FILTER  Keybd  Env
        +00    +00
```

2. Press the **Right/Left** arrow until the **Keybd** parameter flashes.
3. Press the **Inc/Dec** arrow button to select the modulation amount.
4. Increase the value for a wider range of timbre variations, and decrease the value for a narrower range of timbre variations.
5. Press the **Right** arrow so that the parameter stops flashing (or press the master **Edit** button to accomplish the same result).
6. Press the **Right/Left** arrow until the **Env** parameter flashes and repeat steps 3 and 4.
7. Now, press the **Inc** button to go to the **FILTER Lfo/Press** page.

```
FILTER  Lfo    Press
        +00    +00
```

8. Repeat steps **2 thru 6** for the **Lfo** and **Press** parameters.

Note: Lfo changes the filter cutoff based on rate and waveform, and Press changes the timbre based on channel pressure or MIDI aftertouch.

2.3.e Change Program Volume Level

This changes a program's level relative to the other programs.

1. From the Edit menu, select the **OUT Vol/Pan/Bend** page.

```
OUT  Vol  Pan  Bend
     99   +00  OFF
```

2. Press the **Right** arrow button until the volume parameter flashes.
3. Select the desired ouput volume.

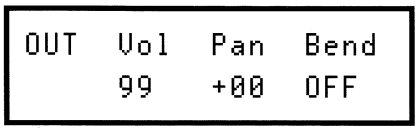
Note: This volume parameter is a percentage of the volume at the volume knob.

2.3.f Set Pitch Bend Range

Note: In the Midibase Voice Module Pitch Bend is set globally. It ranges from 0 to +24 and defaults to +24 when initialized. Each patch can set the Pitch Bend independent of the global setting.

This determines how much the pitch of a program will vary in response to either upward or downward travel of a MIDI pitch bend message. *Example:* If set to a whole tone, rotating the pitch bend wheel all the way away from you will sharpen the pitch by a whole tone, and rotating the pitch bend wheel all the way toward you will flatten the pitch by a whole tone.

1. From the Edit menu, select the **OUT Vol/Pan/Bend** page.



2. Press the **Right** arrow button until the **Bend** parameter flashes.
3. Select the desired bend amount (OFF, HALF, WHOLE, M3RD (minor third), THIRD (major third), 4TH, DM5TH (diminished or flatted fifth), and FIFTH.

2.4 INITIALIZE

2.4.a Entire Unit

This operation will restore the original factory global and MIDI settings, reset the MIDI program change map, restore *all* programs to the factory patches shipped with the unit, and *erase any edits you have made.*

Initialization is also a service procedure. Sometimes microprocessor-controlled devices will "lock up" due to spikes or surges on the AC line, a static electricity jolt, or other gremlins. Initialization will reset the unit and, in many cases, prevent a trip to the repair shop.
Remember—any edited patches will be lost during initialization! Back up and save your work often so that if you ever do need to initialize, your edits will not be lost.
To initialize:

1. Turn the power **off** (if it's on) and wait **15** seconds or more.
2. Hold both the **PROG** and **Right** arrow buttons down while turning on power.
3. Continue holding down the buttons until the display shows **Midibase Voice Module memory Initialized.**

2.4.b EDIT Buffer

To Initialize:
1. Hold the **PROG** and **EDIT** buttons, the press the **EXEC** button.

The patch currently being edited will be initialized to a default patch. This may be useful for creating patches form scratch.

Note: The Initialize Edit buffer feature *only* affects the *edit buffer*. If you want to keep the initialized patch, you must save it to a patch location.

CHAPTER 3: MIDIBASE VOICE MODULE PROGRAMMING

3.1 HISTORY AND BACKGROUND

Synthesizers used to consist of various hardware modules, some of which generated signals, and some of which modified those signals. Much of audio involves elements that make sounds and elements that modify sounds (such as a guitar and amplifier).

Early synthesizers were highly experimental devices. To be as general-purpose as possible, patch cords connected the inputs and outputs of the various signal generating and processing modules (which is why particular synth sounds were called *patches).* Changing a patch involved manually repositioning patch cords and adjusting knobs and switches; if you wanted to recreate a patch at some later time, it was necessary to write down all the patch settings on paper. Even then, due to the vagaries of analog electronics, trying to recreate a patch often didn't produce the same results.

Over the years, certain combinations of modules seemed to work better than others, and since patch cords were troublesome to deal with, eventually these modules were wired together in a "normalized" configuration. Synthesizers such as the Minimoog, Prophet-5, and others eliminated the need for patch cords by containing a normalized collection of sound modules.

3.1.a How the Midibase Voice Module Generates Sound

The Midibase Voice Module uses the same approach to sound generation as the Peavey Midibase guitar, the first popularly-priced keyboard synthesizer to use general-purpose Digital Signal Processing (DSP) chips for sound generation. These chips are essentially high speed computers designed to generate and/or process streams of digitized information such as digital audio signals, and can even do special effects like chorusing and reverb. The Midibase Voice Module's two DSP chips are in turn controlled by a central computer. Because the function of these chips depends on the software controlling them, it is possible to upgrade the Midibase Voice Module with entirely new methods of sound generation by writing new software.

3.1.b Software Emulation of an Analog Synthesizer

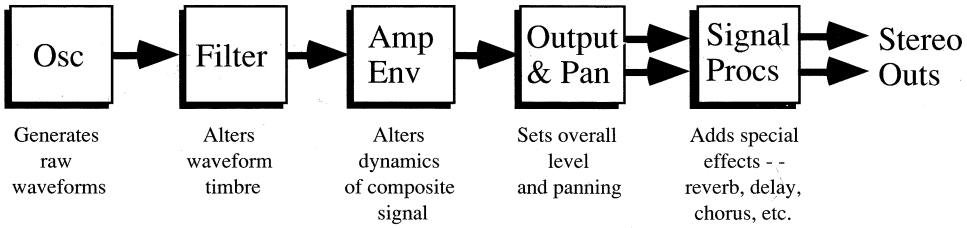
In the current generation of Midibase Voice Module software, the DSP chips have been programmed to emulate a traditional analog synthesizer but with digital sound-generating capabilities. Each synthesizer "module" is a page on the display, and each "knob" or "switch" is a parameter on the page. You can step through different parameters

using a combination of buttons and a data entry knob. All "patching" is done via software, eliminating the need for patch cords; you simply specify which inputs should receive which outputs in those cases where connections are not normalized.

You can take a "snapshot" of all the Midibase Voice Module's parameters and save this in memory as a program. The Midibase Voice Module stores 300 programs on-board and another 200 (500 total accessible) on a RAM or ROM cartridge card that plugs into the front panel card slot.

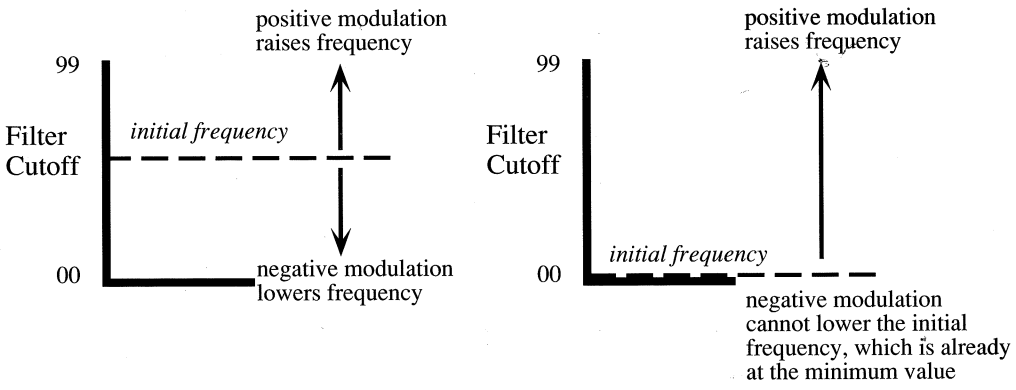
3.1.c The Midibase Voice Module Sound Generating Architecture

The following figure shows the signal flow within the Midibase Voice Module. We'll give an overview of each module, then describe how these modules work in more detail.



The digital oscillator (OSC) provides the actual raw sounds; these come from the internal wavesamples or from samples loaded into memory by the user.

Next in line is a low pass filter, which allows for static or dynamic timbre variations. This is followed by another digital amplifier that determines the dynamics of the overall sound. Finally, an output stage provides panning options and interfaces with the on-board signal processors. Synthesizer programming is the art and science of altering the parameters of various modules to shape sounds in a particular way. Please understand that this can be a complex process and is not mastered in a day, a week, or even a year. The best way to learn is to adjust different parameters as you play to discover how different parameter values affect the sound. Also, become familiar with the signal and modulation flow within the Midibase Voice Module (as shown in the various block diagrams) so that you can understand what happens to a signal as it works its way from oscillator to output.

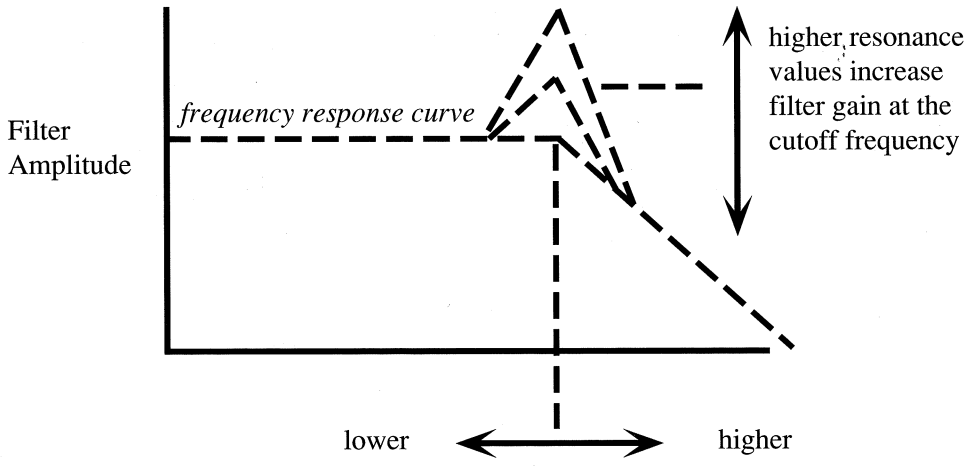


3.1.d Oscillators

The Midibase Voice Module has one oscillator which can produce any of the 105 on-board wavesamples (and 10 drum kits). The oscillator allows for adjustable pitch, level, and modulation source.

3.1.e The Filter

A lowpass filter varies a signal's harmonic content by providing progressively greater degrees of attenuation above a specified *cutoff frequency*. Higher cutoff frequencies give a brighter sound; lower cutoff frequencies give a bassier sound since fewer harmonics are present. Another filter parameter is *resonance*. This increases the amount of gain at the cutoff frequency, which produces a sharper, more resonant sound at high resonance settings. The following figure correlates the cutoff frequency and resonance parameters.



The difference between filter resonance and cutoff

Although static filter settings are useful, varying the filter setting dynamically over time often produces more interesting effects.

Modulating with an envelope can create a particular change in harmonic structure, such as the increase in harmonics that happens when blowing more wind into a wind or brass instrument.

Also remember that when using negative modulation, the filter cutoff should be set to the upper limit of the intended range, since increased modulation will drive the filter to a lower cutoff frequency.

Modulating the filter with the keyboard is also useful since it correlates the cutoff frequency to the note being played on the keyboard. With 0 modulation amount, the filter cutoff tracks the keyboard pitch. Thus, if you have a certain harmonic structure when you play one key, playing a different key will shift the filter frequency to maintain the same harmonic structure.

With negative tracking, the cutoff will change at a less than normal rate as you play higher on the keyboard. This is ideal for bass patches since the lower notes should have more highs, and the high notes should be more muted.
With positive tracking, the filter cutoff will increase at a faster rate than pitch as you play higher up on the keyboard. This works well when you want the lower notes to be muted and the higher notes to really "cut."

3.1.f Levels and Distortion

Levels can be altered at numerous points within the Midibase Voice Module. The oscillator has a level parameter; the envelopes have variable levels (which also influences the overall volume); and the signal processing section offers several level-setting options to choose the right blend between processed and straight signals.

As with any audio system, carelessly turning up levels may produce overload conditions that result in distortion. If you encounter distortion, try the following:

1. Lower the overall level of the Midibase Voice Module or of individual programs. Also make sure you're not overloading your mixer or amp; the Midibase Voice Module puts out a pretty hefty signal.
2. Lower the signal processing output level parameters (the L parameter, discussed in Chapter 4 on signal processing).
3. If distortion still occurs, the final amp may be overloaded. Try lowering the AENV level parameters as these affect the

final amp levels.
4. High filter resonance settings can cause distortion. To solve this, reduce the level of the oscillator to feed a weaker signal into the filter, or reduce the amount of resonance.

Unintentional distortion will probably not occur often but when it does, try some combination of the above remedies. As you become more familiar with the programming process, you will learn how to balance levels to minimize distortion. Generally, step 1 above is all you need to do; step 3 will solve virtually any remaining distortion problems.

3.2 Midibase Voice Module PROGRAMMING TECHNIQUES

Now that we've covered the basics, let's look at the available synthesizer parameters.
Important: In order to save space (there's a lot to discuss here!), we'll assume that you've pressed the Edit master button and know how to select pages and parameters, as described earlier in the manual.
Each heading (typed in UPPER CASE) will be for a particular module (oscillator, filter, etc.). Several modules contain multiple "pages" of parameters, with a page consisting of the parameters shown on a single display screen. Pages are presented in ascending order (*i.e.*, each page is followed by the page that occurs if you press the Up arrow button). In addition to describing parameters, any necessary background information on a function will also be presented.

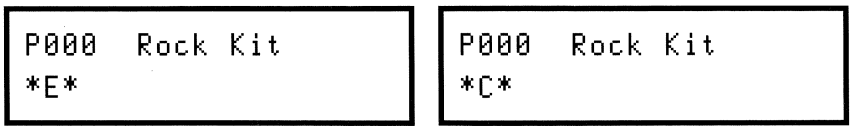
3.2.a About the Compare Function

When you edit a Midibase Voice Module program, you are actually editing a copy of the program. This has two important ramifications:

- To retain the results of your edit, you must save it to a particular program location. If you switch program locations before saving, your edits will be lost.

- Because the original program remains undisturbed, you can compare the edited version to the original program by pressing the COMP (compare) master switch.

The display will indicate an edited program by showing *E* in the lower left-hand corner. If you select the original program via the compare function, you'll see *C* (for compared version) in the lower left-hand corner.



3.3 PROGRAM NAME

This is the first page of the Edit menu. To change the name, use the Left/Right arrow buttons to choose the character to be changed, then select the desired character. For more information, see section 2.3.b.

3.4 OSC

Oscillator has two pages of parameters.

Page 1 Parameters

Wave

Selects one of the available waveforms listed below.

Traditional analog synthesizer waveforms
Sine (no harmonics; very pure tone)
Triangle (weak, even harmonics; clarinet-like)
Sawtooth (odd and even harmonics; brass-like)
Square (strong, odd harmonics; hollow-sounding)
25% Pulse (various harmonics missing; reedy)
20% Pulse (various harmonics missing; reedy)
15% Pulse (various harmonics missing; reedy)
10% Pulse (various harmonics missing; reedy)
5% Pulse (various harmonics missing; buzzy)

Digitally generated waveforms
DGW1-5

Non-harmonic waveforms
Spec1-5

Combination loops

B Loop	C Loop
ABCHR	Koto

Organs

Pipes	Full B3
Jazz B3	Organ 1
Organ 2	Percussive Organ

Bells

Bell 1	Bell 2
Breath	

Noise

Steam	Bottle

Midibase™
Voice Module

Bass
- Fingerbass
- Fretless
- Acoustic Bass
- Synth Bass 2-4
- Pick Bass
- Slap Bass
- Syn Bass

Pianos
- Piano
- Electric Piano 1-4
- Electric Piano Loop
- Harpsicord

Guitars
- Acoustic Guitar
- Guitar Loop 3
- Electric Guitar 1-3

Orchestral
- String
- Orkhit

Voices
- Abbey
- Male

Accordians
- Sqeezebox

Wind Instruments
- Flute
- Clarinet
- Sax
- Trombone
- Flute 2
- Oboe
- Trumpet
- Synth Bass

Tuned Percussion
- Woody (marimba)
- Vibes
- Metal (struck)

Drum Sounds
- Tom 1
- Conga
- Taiko
- Gamelan
- Agogo
- Clave
- Cabasa
- Triangle
- Lightning
- High hat closed
- Ride
- Reverse Cymbal
- Tom 2
- Timbale
- Gambng (Gamelan variation)
- Kalimba
- Cowbell
- Tambourine
- Claps
- Pole
- Scratch (turntable)
- High hat open
- Crash
- Electric Tom

Kick 1-5 Snare 1-4
Sidekick Kit 0-9

Coarse (-24 to +24 semitones)

Adjusts the oscillator frequency in semitone steps, from -24 (transposed down two octaves) to +24 (transposed up two octaves).

Fine (-99 to +99 cents)

Adjusts the oscillator frequency in cents, from -99 (transposed down 99/100 of a semitone) to +99 (transposed up 99/100 of a semitone).

Page 2 Parameters

```
OSC  Kbd  Penv  Lfo
     +00  +00   +00
```

Kbd (-99 to +99)

Sets the modulation degree and polarity (positive or negative) for the keyboard position.

Penv (-99 to +99)

Sets the modulation degree and polarity (positive or negative) for the pitch envelope parameter.

Lfo (-99 to +99)

Sets the modulation degree and polarity (positive or negative) for the pitch envelope parameter.

Note: You can set the keyboard to non-transpose mode (*i.e.*, the same note is played on any keyboard key). This is handy for some sound effects applications. To do this, set the OSC keyboard amount to -99. All other modulation should be set to zero (+00). It is also possible to set alternate tuning scales; see Chapter 6 .

3.5 FILTER

The filter module contains three pages.

Page 1 Parameters

```
FILTER Cutoff  Res
       99      00
```

Cutoff (00-99)

Chooses the filter's initial cutoff frequency. Progressively lower values remove progressively more harmonics, giving a duller sound; progressively higher values let more harmonics through, giving a brighter sound.

Note: Signals with complex harmonic structures are most affected by the filter. *Examples:* A sine wave has virtually no harmonics (aside from those caused by the signal generation process) and you will not hear dramatic changes once the filter cutoff is higher than the note pitch. A harmonically-rich sample (like sax) will be affected greatly by the filter.

Resonance (00-99)

This sets the amount of gain at the filter's cutoff frequency. Higher settings give sharper, more "whistling" effects.

Page 2 Parameters

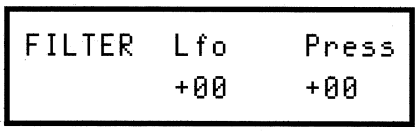
Keybd (-99 to +99)

Sets the filter cutoff and polarity (positive or negative) for the MIDI note number.

Env (-99 to +99)

Sets the modulation degree and polarity (positive or negative) for the filter cutoff over time.

Page 3 Parameters



Lfo (-99 to +99)

Sets the modulation degree and polarity (positive or negative) for filter cutoff based on Lfo waveform and rate.

Press (-99 to +99)

Sets the cutoff frequency based on aftertouch or channel pressure.

3.6 MODULATION MODULES

We'll now describe the parameters for the various modulation sources. However, note that six modulation sources have no variable parameters. We will discuss these first.

3.6.a Keyboard Modulation Sources

These modulation signals are generated when you play a keyboard or other controller.

Velocity produces data relating to how fast a key goes from the key up (note off) to the key down (note on) position. This relates to the dynamics of your playing.

Note Position produces data relating to the note played on the keyboard. You would use this modulation source if you wanted a different sound in the upper and lower registers.

Pressure produces data relating to how hard you press on the keyboard after the keys are down. One way to use this would be to add vibrato, or increase brightness, as a note sustains.

3.6.b Wheel

Most MIDI keyboards also include a modulation wheel, usually the right-most wheel of a pair of wheels located toward the left of the keyboard. This is virtually always assigned to controller 1. However, some keyboards include more than one mod wheel (in which case one or both will be assignable to different MIDI controllers), and some synthesizers use either a lever or joystick to provide modulation wheel signals.

3.7 ENVELOPE GENERATORS

Envelope generators are such an important part of shaping a particular sound that we will first describe how envelope generators work and different types of envelope structures.

An envelope generator provides a modulation signal that varies over time. Applying it to different modulation destinations produces different results. If the amplitude decays over time, percussive effects (plucked strings, drums, etc.) will result; brass, woodwind, and some bowed instruments have amplitudes that increase over time. A note-on message triggers each envelope.

3.8 LFOs (LOW FREQUENCY OSCILLATORS)

The Low Frequency Oscillator (LFO) creates a cyclic (periodic) modulation of synthesizer parameters such as pitch, volume, or filter cutoff. Applying a periodic modulating signal to the oscillator produces vibrato; this is such an important application that the Midibase Voice Module lets you control the LFO signal amplitude and frequency with the modulation wheel, so you can add vibrato in real time as you play. The amount of vibrato (or other LFO-induced modulation) can also be set to a constant amount, or some combination of the two.

The Midibase Voice Module includes one independent LFO, with two pages of parameters, as modulation sources.

Page 1 Parameters

Rate (00-99)

Varies the LFO speed, from slow (00) to fast (99).

Shape

There are five LFO waveforms.

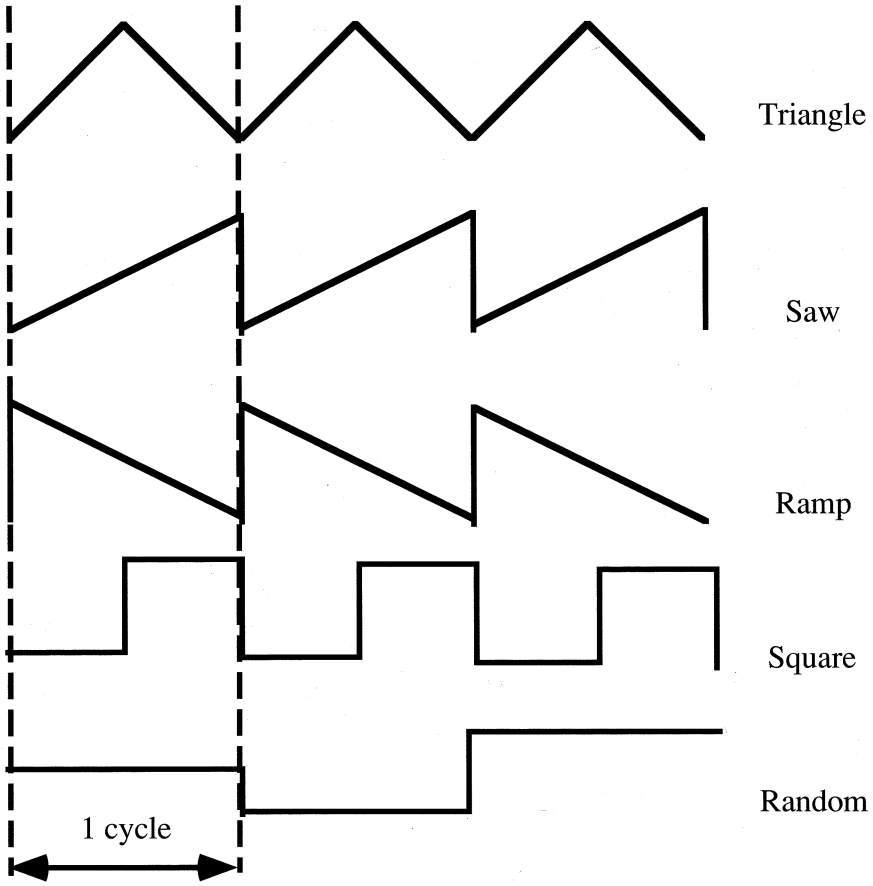
Tri (triangle): This produces rises and falls of equal time. Triangle LFO waveforms are commonly used for vibrato and tremolo.

Saw (sawtooth): This produces a rising waveform that, after reaching its maximum level, snaps back to zero and starts over again.

Ramp: This is the opposite of Saw in that a falling waveform, after reaching its minimum level, snaps back to maximum and starts over again.

Sqr (square): This waveform alternates between minimum and maximum values. It is useful for creating trills (and European-style police sirens if you're into sound effects).

Rndm (random): Each LFO cycle produces a randomly-generated level. This is good for sound effects and for adding slight randomized pitch variations to instruments such as trumpets, which seldom maintain a totally consistent pitch during playing.



Amount (00-99)

This sets the maximum signal level generated by the LFO, from minimum (00) to maximum (99). Since each modulation input can also vary the level received from a modulation source such as the LFO, this parameter may seem redundant. However, it can act as a "global" control. *Example:* Assume you've set up LFO routings to several modulation inputs, and decide you'd like to lower the overall LFO depth. Rather than re-adjust each modulation input setting, simply reduce this amount.

Page 2 Parameters

```
LFO Dly W1R W1A Pres
    00  +00 +00 +00
```

Dly (00-99)

LFO delay time. This delays the onset of modulation by an adjustable

amount, from no delay (00) to maximum delay (99).

WlR (-99 to +99)

Wheel rate, chooses the LFO rate and polarity (positive or negative) of the modulation wheel.

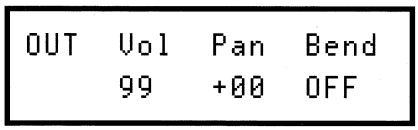
WlA (-99 to +99)

Wheel amount, chooses the LFO amount and polarity (positive or negative) of the modulation wheel.

Pres (-99 to +99)

Chooses the LFO Amount and polarity (positive or negative) based on MIDI channel pressure data.
Applications: Use pressure to increase the amount of LFO modulation as you press harder on a key once it is down. This is very useful for adding expressive vibrato effects.

3.9 OUTPUT



Volume (00-99)

This parameter sets the overall volume for single programs, or Link 1 of a Combi program (described later). Higher numbers give higher levels.

Pan (-99 to +99)

A program can be placed anywhere in a stereo (two-channel) field. 99 pans full left; moving toward 00 moves the program toward center. Moving toward +99 pans the program toward full right.

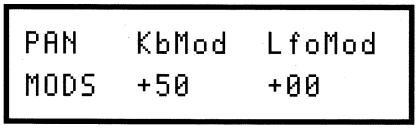
Bend (Off, Half, Whole, M3rd, Third, 4th, dm5th, 5th)

This determines how much the pitch of the oscillator varies in response to pitch bend wheel travel. *Example:* If set to a whole tone, rotating the pitch bend wheel all the way away from you will increase the pitch by a whole tone, and rotating the pitch bend wheel all the way toward you will decrease the pitch by a whole tone.

Bend options are OFF, HALF (step), WHOLE (step), M3RD (minor third), THIRD (major third), 4TH, DM5TH (diminished or flatted fifth), and FIFTH.

3.10 PAN

In addition to the static pan setting available on the output page, the following page allows for pan position modulation.



KbMod (-99 to +99)

Sets the pan keyboard modulation degree and polarity (positive or negative). This modulates the baseline pan setting in the Output page. This is used to "move" the apparent spatial position of a sound in the stereo field based on the MIDI note number.

LfoMod (-99 to +99)

Sets the pan LFO modulation degree and polarity (positive or negative). This modulates the baseline pan setting in the Output page. This is used to "shift" a sound back and forth in the stero field based on the LFO rate and waveform.

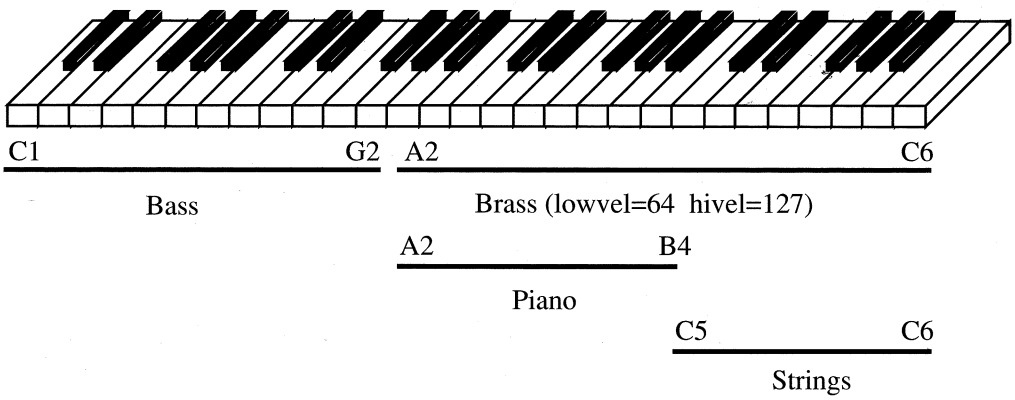
3.11 ABOUT COMBI PROGRAMS

A Combi program lets you link up to four different programs to create split and layer programs. The first "link" is the original program chosen for the Combi program; the other three links can be any other programs within the Midibase Voice Module, which are specified as you program the Combi.

In a *split* program, certain sounds will cover only a certain range of the keyboard. A Combi allows up to four splits.
Example: Acoustic bass in the lower two octaves and trumpet in the upper octaves lets you play trumpet melodies with your right hand against left-hand bass parts.

In a *layered* program, pressing down on a key will play two or more sounds simultaneously. A common *example* is layering strings and piano on one key. A Combi allows up to four programs to be layered.

The Midibase Voice Module also allows combinations of splits and layers. The following figure shows a typical Combi "map"— Bass from C1-G2, Piano from A2-B4, Brass from A2-C6, and Strings from C5 to C6. Strings are layered with the upper octave of brass; if you play in the range of C5-C6, you'll play both strings and brass. If you play from A2-B4, you'll play both piano and brass.



Furthermore, each link that makes up the split or layer can respond to a specific velocity range. One application would be to layer standard bass and slap bass sounds together, and have low velocity notes trigger the standard bass and high velocity notes trigger the slap sound. In the example above, Brass has been set for a low velocity of 64 and high velocity of 127. Thus, velocity values must be 64 or more to trigger the brass layer.

Each link can also be delayed, detuned, transposed, and have its own volume level. If you're starting to think this can make some really great sounds, well, you're right. Just remember that layered sounds use up more voices if they can be played simultaneously.

There are six Combi program pages. The last five are accessible only if program type (see **Page 1 Parameters**, next) is set to Combi.

Page 1 Parameters

```
COMBI  Program Type
       COMBI
```

Program Type (Single or Combi)

Select Single for standard programs or Combi if you want to link two or more programs together. Notice that the first progrma character is either C or S. If C then the progrma is a COMBI, if S then it is a Single.

Page 2 Parameters

```
COMBI  Link1  Vol 99
C099   Marimba
```

Link# (# equals 1-4)

This parameter chooses the link whose parameters will be set on this and other Combi pages. Link 1 is the original program found in the

program's memory location. To choose the desired link, press the Right arrow button and select the desired number.

Link# Program

Selects the desired program for the selected link, as shown on the bottom line. If no program is currently selected, the display will say -OFF-. The first link cannot be changed, since it represents the original program.

Link# Volume (00-99)

Selects the link's volume level.

Page 3 (COMBI Link#) Parameters

```
COMBI  LoKey  HiKey
Link1  C-1    G9
```

LoKey (C-1 to G9)

This sets the low end of the link's key range. *Example:* To have a link play only in the range of C2-G3, set LoKey to C2.

HiKey (C-1 to G9)

This sets the high end of the link's key range. *Example:* To have a link play only in the range of C2-G3, set HiKey to G3.

Page 4 (COMBI Link#) Parameters

```
COMBI  LoVel  HiVel
Link1  000    127
```

LoVel (000 to 127)

The selected link will not play if the note velocity is lower than this value. *Example:* To have a link play only if the velocity is between 064 and 127, set LoVel to 064.

HiVel (000 to 127)

The selected link will not play if the note velocity is higher than this value. *Example:* To have a link play only if the velocity is between 000 and 080, set HiVel to 080.

Page 5 (COMBI Link#) Parameters

DTune (-99 to +99 cents)

Adjusts the selected link's tuning in cents, from -99 (transposed down 99/100 of a semitone) to +99 (transposed up 99/100 of a semitone). Slight amounts of detuning add chorusing and flanging effects (these effects can also be created by the on-board signal processing).

TrPose (-24 to +24 semitones)

Transposes the selected link's frequency in semitone steps, from -24 (transposed down two octaves) to +24 (transposed up two octaves).

Page 6 (COMBI Link#) Parameters

Delay (000 to 990 ms in 10 ms increments)

The selected link will not start playing until the specified delay time has elapsed. This is useful for adding echo effects or having sounds with multiple attacks.

CHAPTER 4: PROGRAMMING THE ON-BOARD SIGNAL PROCESSORS

4.1 ABOUT SIGNAL PROCESSING

The Midibase Voice Module's "secret weapon" in its sonic arsenal is a sophisticated complement of signal processing options, including time-based effects (reverb, chorus, flanging, stereo delay), equalization, and distortion. The results are comparable to what can be obtained from outboard rack-mount devices. Signal processing setups are not global; each program has its own signal processing parameters, so each program can be processed in a unique way.

Because of the depth of signal processing options, a few considerations should be discussed prior to adjusting any parameters.

4.1.a Effects Structure

There is one independent effect (FX for short) unit. It can include one or two effects (called Single or Dual effects), giving a possible total of up to two signal processing "modules" in all. The signal processing options (in addition to Bypass, where the effect module has no effect) are listed below, along with a brief description of each function.

Single Effects

Reverb: produces the type of ambient effects found in rooms and concert halls
Delay: produces echo unit effects, where a sound is repeated on a regular basis
Chorus: simulates the sound of instruments playing *an ensemble,* giving a thicker, richer sound
EQ: equalization; a type of tone control used to alter frequency response
Gate: this "gated" reverb effect is similar to standard reverb, but with a more abrupt decay and more synthetic sound
Distortion: produces a fuzz effect that can create a dirtier, grittier sound
Exciter: adds harmonic content to enhance the "presence" of a signal and provides a 2 band equalizer.

Dual Effects (these include two of the above single effects)

Reverb/EQ
Distortion/Reverb
Chorus/Reverb
Delay/Distortion
Delay/Chorus
Reverb/Distortion
Reverb/Chorus
Delay/EQ
Distortion/Delay
Chorus/Delay

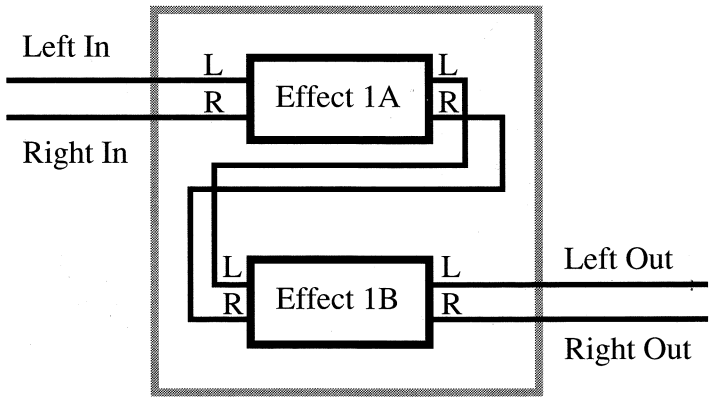
- Chorus/EQ
- Gate/Chorus
- Distortion/Chorus
- EQ/Gate
- Distortion/EQ
- Delay/Reverb
- EQ/Chorus
- Chorus/Gate
- Chorus/Distortion
- Chorus/Exciter
- EQ/Distortion
- Reverb/Delay
- EQ/Reverb

Note: Chorus effects can also provide flanging, a "swooping," jet-airplane like sound, with the proper parameter settings (described later). Also remember that the previously discussed modules offer many signal processing options for one or more links in a Combi patch.

4.1.b Effect

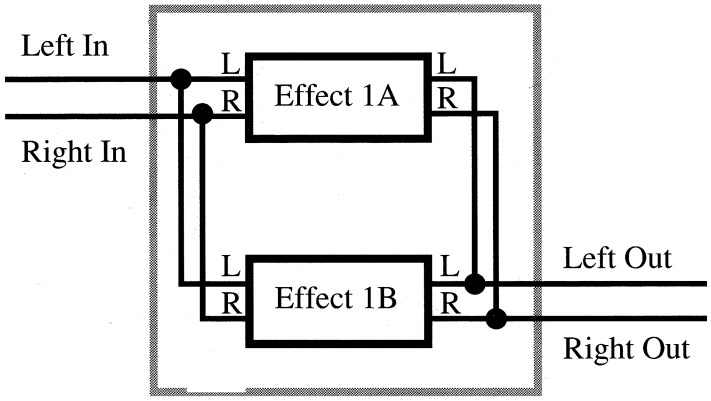
If Effect includes a pair of effects (such as Reverb/Chorus), these can be configured in three different ways: series, parallel, and dual.

The following figure shows the *series* connection. The stereo audio outputs feed Effect's first stage, which then feeds the second stage. The second stage provides the master stereo outputs and provides a master level parameter.



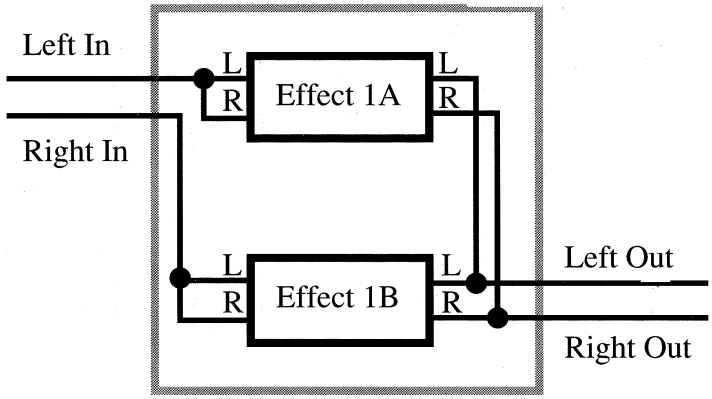
Series Configuration

The *parallel* connection routes the stereo audio outputs to both stages simultaneously; their outputs are then mixed together to provide the master stereo outputs. Each output has an associated level parameter.



Parallel Configuration

The *dual* connection feeds the left channel to one stage and the right channel to the other stage. Each effect synthesizes a stereo output, and these are mixed together into a master stereo output. Each output has an associated level parameter. This is very useful for applying a given effect to individual programs in a Combi. This is done by panning the program left or right, thereby routing the output to one or the other of a dual effect setup.



Dual Configuration

4.1.c Signal Processors, Multi Configurations, and MIDI

Calling up a program calls up a particular set of signal processing parameters but what happens in a Multi configuration, where you have multiple programs?

The Midibase Voice Module, even when in a Multi configuration where different programs respond to different channels, nonetheless uses MIDI *base channel* information the channel that would be selected if the

unit was in MIDI Poly mode (the base channel is the first parameter in the MIDI menu). If a program in a Multi is set to the base channel, then its signal processing effects parameters will affect all programs that are part of the Multi.

If no program in a Multi is set to the base channel, then the Midibase Voice Module will use whichever program parameters belong to the program that would be selected if the Midibase Voice Module was not in a Multi configuration. *Example:* If you select Program 027, then switch over to a Multi, the effects parameters for Program 027 will still affect all programs that are part of the Multi.

The base channel is also important because sending a program change over the base channel to call up a different program will not only select that program, but also select the signal processing parameters associated with that program.

If this seems complicated, well, it can be if you want to use the signal processing options to their maximum potential. To get started, try working at first with single effects to hear how they affect the sound. Then try different combinations to become familiar with the various possibilities.

4.2 PROGRAMMING THE MAIN SIGNAL PROCESSING PARAMETERS

The following parameters can be edited by pressing the Edit master button and scrolling through the various signal processing pages.

Effect Config

This selects the Effect configuration (series, dual, or parallel).

FX Type

This chooses a sound effect to be used from the single and dual effects list in section 4.1.a.

L Stands for level. There will be one level parameter when the Effect is in a series configuration, and two level parameters for dual or parallel configurations.

The next several pages cover the parameters for the effect(s) chosen under FX Type. These parameters are discussed later.

4.3 INDIVIDUAL EFFECTS PARAMETERS

4.3.a Reverb Parameters

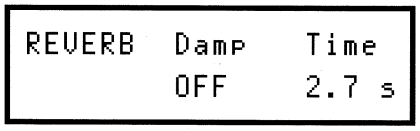
You'll find that different types of reverb sound best with particular types of signals. *Example:* A "smooth" reverb works well with percussive sounds, where as "medium" reverb seems well-suited to piano sounds.

Page 1 Parameters

Type Select between Plate, Room, and Hall. Each provides a different reverb character.

Size Select between small, medium, large, huge, and smooth. This alters the apparent size of the reverberant space.

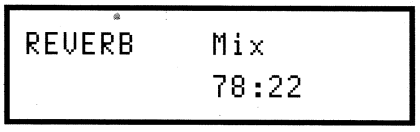
Page 2 Parameters



Damp Determines the high-frequency "absorption" of the room by using a low-pass filter to simulate a more acoustically-"dead" environment. Select from cutoff frequencies of 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, 8 kHz, and OFF (full high frequency response).

Time Sets the length of the reverb "tail." Select from 0.0 to 8.0 seconds in 100 millisecond increments, and from 8.0 to 30.0 seconds in one second increments.

Page 3 Parameters



Mix Controls the mix of dry and processed (wet) signals. The display shows the effect name in the upper left and effect number in the lower left.

The variable mix parameter shows the ratio between dry and wet signals, as well as DRY for all-dry and WET for all-wet signals. The mix value affects only the wet/dry balance within the effect; it is independent of the mix levels for Effect 1 and Effect 2 (the **L** parameter described in section 4.2).

4.3.b Delay Parameters

This is a stereo delay system with feedback. It's useful for slapback echos, long echoes, and polyrhythmic echo effects (try setting one delay time to 67% of the other's delay time).

Page 1 Parameters

Time L Sets the left channel delay time, from 2.5 milliseconds to 250 milliseconds, in 2.5 millisecond increments.

Time R Sets the right channel delay time, from 2.5 milliseconds to 250 milliseconds, in 2.5 millisecond increments.

Page 2 Parameters

FdBak (00-99) Determines how much of the echo signal feeds back to the input for re-echoing. Higher values give longer echo "tails."

Mix Controls the mix of dry and processed (wet) signals. The display shows the effect name in the upper left and effect number in the lower left.

The variable mix parameter shows the ratio between dry and wet signals, as well as DRY for all-dry and WET for all-wet signals. The mix value affects only the wet/dry balance within the effect; it is independent of the mix levels for Effect (the **L** parameter described in section 4.2).

4.3.c Chorus Parameters

Stereo chorusing thickens up a sound by delaying the sound by a small amount (generally less than 25 milliseconds), changing the delayed sound's pitch periodically with LFO modulation, then mixing the delayed and straight signals together. The various phase cancellations

and additions that occur as the delayed and straight signals interact produce chorusing.

With many synthesizers, the recommended way to chorus is layering two identical sounds together and slightly detuning them. However, this cuts the available polyphony in half since two notes are layered on one key.

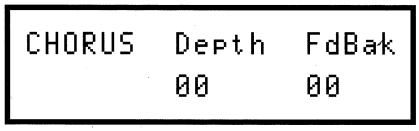
Note that the chorus effect can be used for flanging, as described below.

Page 1 Parameters

Delay Sets the initial chorus delay time in 0.5 millisecond increments from 00.5 ms to 25.0 ms. Generally, the range of 12 to 25 ms is ideal for chorusing; 00.5 ms to 12 ms is a good range for flanging effects.

Rate Sets the periodic modulation rate from 0.0 Hz to 9.9 Hz, in 0.1 Hz increments. Use slower rates (e.g., 0.3 Hz) for flanging.

Page 2 Parameter



Depth (00-99) Varies the modulation amount from 00 (no modulation) to 99 (maximum modulation). Flanging usually sounds best with maximum modulation, a short delay time, and a slow modulation rate.

FdBak (00-99) Determines how much of the chorused signal feeds back to the input; more feedback creates a more intense sound.

Page 3 Parameters

Mix Controls the mix of dry and processed (wet) signals. The variable mix parameter shows the ratio between dry and wet signals, as well as DRY for all-dry and WET for all-wet signals. The most intense chorusing and flanging effects occur with a 50:50 mix of dry to wet. Tilting the ratio toward dry (e.g., >50:50) puts the chorus or flanging effect more in the background.

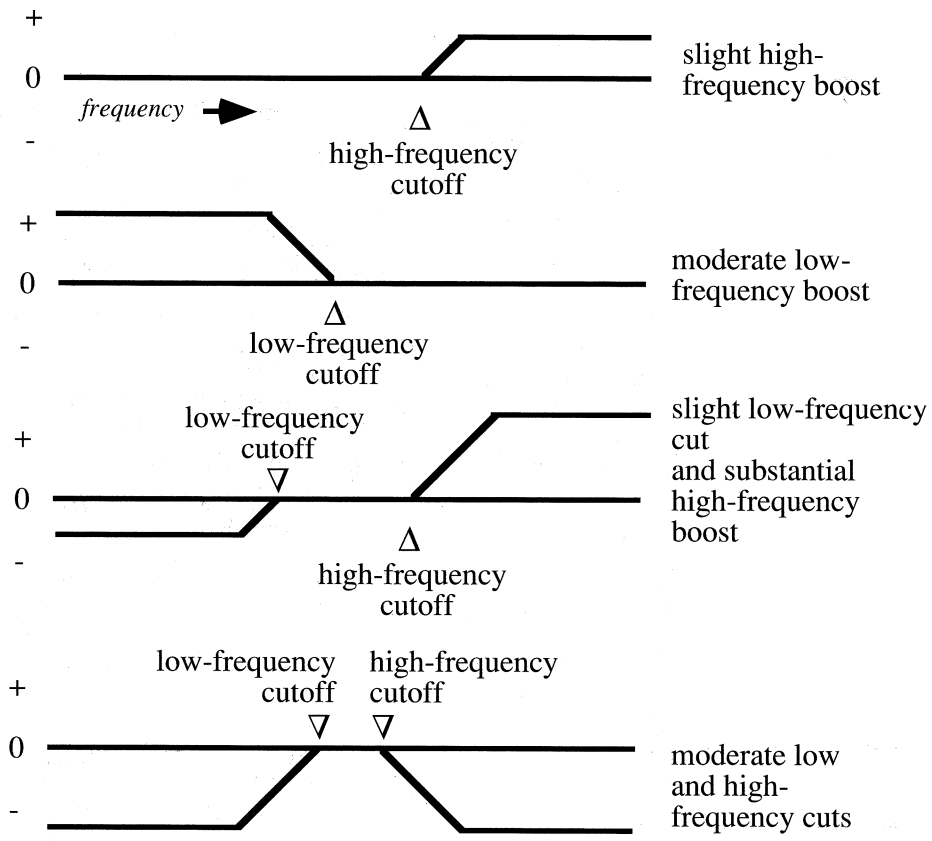
The mix value affects only the wet/dry balance within the effect; it is

independent of the mix levels for Effect (the **L** parameter described in section 4.2).

4.3.d EQ Parameters

EQ alters a sound's frequency response. *Example:* Boosting the lower frequencies gives a bassier sound; boosting the higher frequencies gives a brighter sound.

The Midibase Voice Module's EQ is a two-channel, shelving type (so-called because the frequency response creates a "shelf" starting at the chosen frequency). The figure below shows some typical response curves available with the EQ.



Page 1 Parameters

LoFreq This sets the low frequency cutoff. Options are 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, and 8 kHz.

Gain Sets the amount of boosting or cutting affecting the frequency

chosen abov, in 1 dB increments, from -12 dB (maximum cut) to 00 (no affect) to +12 dB (maximum boost).

Page 2 Parameters

HiFreq This sets the high frequency cutoff. Options are 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, and 8 kHz.

Gain This operates identically to Gain described in section 4.3.d.

Page 3 Parameters

Mix Controls the mix of dry and processed (wet) signals. The variable mix parameter shows the ratio between dry and wet signals, as well as DRY for all-dry and WET for all-wet signals.

The mix value affects only the wet/dry balance within the effect; it is independent of the mix levels for Effect (the **L** parameter described in section 4.2).

4.3.e Gated Reverb Parameters

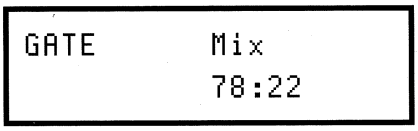
Gated reverb produces an effect which is similar to reverb, but has a sharper and more synthetic decay. It is frequently used with percussive signals to give more "punch" but is by no means limited to percussive sounds.

Page 1 Parameters

Type Chooses between three different gated reverb effects: Gate 1, Gate 2, and Gate 3.

Density (00-99) This determines the envelope shape of the reverb tail by altering the density of the early reflection patterns. Higher density settings give a longer tail.

Page 2 Parameters



Mix Controls the mix of dry and processed (wet) signals. The variable mix parameter shows the ratio between dry and wet signals, as well as DRY for all-dry and WET for all-wet signals. The mix value affects only the wet/dry balance within the effect; it is independent of the mix levels for Effect (the L parameter described in section 4.2).

4.3.f Distortion Parameters

Distortion is useful for creating fuzz guitar sounds or for adding a bit of "crunch" to otherwise clean sounds, such as organ. *Note:* The Distortion/EQ combination effect is very useful, as you can use EQ to remove some high frequencies to make a "warmer" fuzz sound.

Page 1 Parameters

Amount (00-09) Chooses the distortion intensity; higher values create more distortion.

Mix Controls the mix of dry and processed (wet) signals. The variable mix parameter shows the ratio between dry and wet signals, as well as DRY for all-dry and WET for all-wet signals. The mix value affects only the wet/dry balance within the effect; it is independent of the mix levels for Effect 1 and Effect 2 (the L parameter described in section 4.2).

4.3.g Exciter Parameters

The exciter effect is a mild form of distortion that gives a sound more impact. Generally, this effect is best when used subtly; try setting the Mix option for just a small amount of wet signal when you first experiment with this effect.

Page 1 Parameters

Contour (-100 to +100) Higher values increase the depth of the Exciter.

Freq (1.9, 2.1, 2.4, 2.8, 3.2, 3.8, 4.8, 6.4, 9.6, 19.2) Higher values increase the brightness and complexity of the excited sound.

Page 2 Parameters

```
EXCT LoFreq  Gain
     125Hz   +00 dB
```

Freq 1 This sets the high frequency cutoff. Options are 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, and 8 kHz.

Gain This operates identically to Gain described in section 4.3.d.

Page 3 Parameters

```
EXCT HiFreq  Gain
     125Hz   +00 dB
```

Freq 2 *This sets the high frequency cutoff. Options are 125 Hz, 250 Hz, 500 Hz, 1 kHz, 2 kHz, 4 kHz, and 8 kHz.*

Gain This operates identically to Gain described in section 4.3.d.

Page 4 Parameters

```
EXCITER   Mix
          78:22
```

Mix Controls the mix of dry and processed (wet) signals. The variable mix parameter shows the ratio between dry and wet signals, as well as DRY for all-dry and WET for all-wet signals. The mix value affects only the wet/dry balance within the effect; it is independent of the mix levels for Effect (the L parameter described in section 4.2).

4.4 COMBINATION EFFECTS PARAMETERS

The combination effects use the same parameters as described above. *Example:* Reverb/Chorus presents the same parameters as the individual Reverb and Chorus effects.

The order of effects can make a big difference in the overall sound. As always, experimentation is the key to learning these differences, but following are some specific examples to get you started.

Distortion/Reverb and Reverb/Distortion Placing distortion before reverb gives a clean reverb effect superimposed on a distorted sound. Placing distortion after reverb distorts the reverb signal, giving a "dirty" reverb effect.

Delay/Chorus and Chorus/Delay Placing delay before chorus means that chorus will produce an overall modulation of the delayed sound. Placing chorus before delay produces a more diffused sound as the echoes repeat different parts of the chorused signal.

Distortion/EQ and EQ/Distortion With distortion before EQ, the EQ shapes the distorted sound. Placing EQ prior to distortion changes the character of the distortion by emphasizing or de-emphasizing those frequencies to be distorted.

Reverb/EQ and EQ/Reverb This is an example of a combination effect where the difference between the two options is not particularly noticeable; EQing reverb or reverberating EQ makes little practical difference.

CHAPTER 5: CREATING DRUM KITS

5.1 DRUM KIT BASICS

The Midibase Voice Module contains 10 special "multi-sample" presets called drum kits. These presets consist of up to 32 percussive (or melodic) wavesamples, chosen from the Midibase Voice Module's set of waveforms and assigned to specific keys. To prevent confusion with other wavesamples used in other programs, the 32 wavesamples used in a drum kit are called instruments.

Each instrument can be assigned to a particular range of MIDI notes, with individual tuning, amplitude decay, and level. After building a drum kit, it remains in memory until altered and can be assigned to a program, just like any other wavesample. However, there are some differences because the Midibase Voice Module's program voice architecture is modified for drum kit construction.

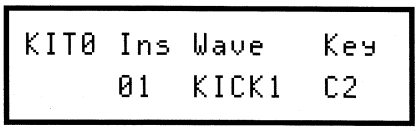
- The drum kit pan assignment overrides the program's output pan parameter.
- The drum kit output level overrides the usual program output level parameter.
- The AMPENV (controlled by AENV) is active, but with release time set by the drum kit decay parameter.
- Velocity sensitivity should be assigned using the VelMod parameter in the AENV menu.

Although most people are interested in the Midibase Voice Module because of its instrument sounds, don't overlook the drum kit options. The Midibase Voice Module can serve as an excellent drum expander module; even if you already own a drum machine, creating a Midibase Voice Module drum kit with similar sound and key assignments to that of the machine, and triggering the two sound sources simultaneously, can make a really huge drum sound.

5.2 ACCESSING AND MODIFYING THE DRUM KIT PARAMETERS

The general procedure is to:
1. Press the **GLOBL** master button.
2. Select the **KIT#/Ins/Wave/Key** page.
3. There are two pages of drum kit parameters, described below.

Page 1 Parameters



KIT# (0-9)
Select a kit number into which you will program the various instruments.

Ins (01-32)
This selects the instrument number to which parameters will be assigned.

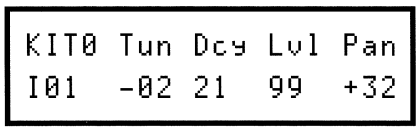
Wave
This chooses from any of the available Midibase Voice Module samples in ROM. You are not limited to the traditional drum sound samples.

Key
Each instrument is assigned to a specific key range. This parameter sets the upper note of the range; the lower note of the range is one semitone higher than the highest note of the previously-selected instrument. *Example:* If Instrument 01 covers the range of A0-D1, and Instrument 02's Key parameter is set to G1, then Instrument 02's range is D#1-G1.

If you assign a drum sound "between" existing drum sounds, the existing sounds will be reordered to accommodate the new sample. In the example given above, if you assigned Instrument 03 so that the top key is F1, Instrument 01 would cover the range of A0-D1, Instrument 03 would extend from D#1 to F1, and Instrument 02 would cover F#1-G1.

Note: An initialized drum kit assumes that you are going to build the drum kit starting from the top of the keyboard and work your way down, so all keys are set to C-1. If you want to build a drum kit starting from the bottom of the keyboard and work your way up, you might want to set all keys initially to G9.

Page 2 Parameters



I## (01-32)

This lets you choose a particular instrument for parameter adjustment so you don't have to keep jumping back to Page 1 to select an instrument.

Tune (-36 to +36 semitones)

Adjusts the instrument's frequency in semitone steps, from -36 (transposed down three octaves) to +36 (transposed up three octaves).

Decay (00-99)

Sets the instrument's decay time by altering the ENV4 decay parameter (T4).

Level (00-99)

Determines the instrument's level. Higher values give higher levels.

Pan (-99 to +99)

An instrument can be placed anywhere in a stereo (two-channel) field. -99 pans full left; moving toward 00 moves the program toward center. Moving toward +99 pans the program toward full right.

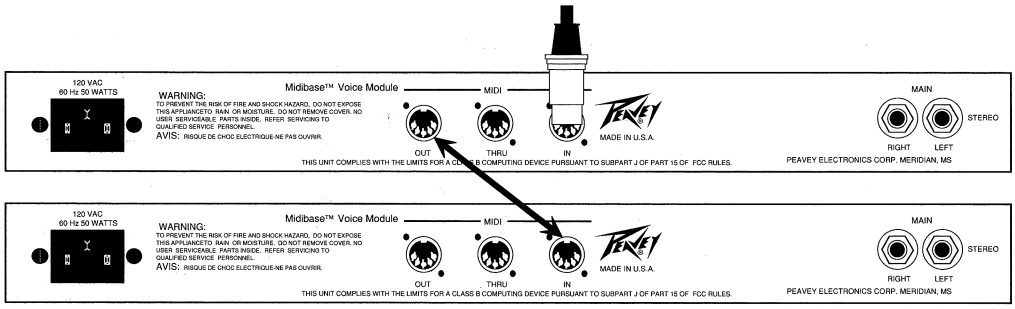
CHAPTER 6: ADVANCED APPLICATIONS

Now that we've covered the basics, it's time to get into some advanced applications and techniques.

6.1 MIDI OVERFLOW MODE

The second page of MIDI parameters includes one called Ovf (overflow), which can be either off or on. Overflow lets you chain two Midibase Voice Modules together to double the number of voices, from 16 to 32 (or chain three Midibase Voice Modules together if you want 48 voices). If the first Midibase Voice Module in the chain runs out of voices, it assigns any "overflow" notes to the next Midibase Voice Module in the chain rather than steal existing voices in the first Midibase Voice Module.

The following figure shows how to hook up two Midibase Voice Modules to double the number of voices. Remember that Ovf must be on in the appropriate MIDI menu page for this feature to work.



6.2 ALTERNATE TUNING TABLES

The subject of alternate tunings is a fascinating one that's steeped in history. The even-tempered scale that is almost universally used in Western music is a comparatively recent invention; prior to that other types of tuning predominated, and non-even-tempered scales are still used in many parts of the world.

The even-tempered scale is particularly useful in harmonically-complex music that modulates a lot. This is because the even-tempered scale breaks an octave down so that multiplying one frequency by the twelfth root of 2 gives the frequency of the next higher-pitched semitone. This means that the pitch difference ratio between each semitone is constant, thus allowing for easy transposition.

However, the twelfth root of 2 is an irrational number. Without going into a lot of convoluted math, this means that the even-tempered scale

contains small tuning errors compared to theoretically "perfect" scales, such as just intonation. Just intonation bases its tunings on ratios of whole numbers, with an implied preference for small number ratios such as 3:2, 5:6, etc.; this ensures that all notes within a given scale are perfectly in tune with each other. However, again for reasons beyond the scope of this manual, transposition into keys other than the one for which a just tuning is optimized can create intervals that are audibly out of tune.

Prior to the days of computers, cultures that used just intonation tended to stay within a particular key due to the difficulties of modulation. However, considering that it is possible to shift pitch electronically via transposition, this is no longer as much of an issue. *Example:* Suppose you set up a program in just intonation. You can play in the key of C and have perfect intonation. To modulate, copy the program to another program, and transpose it to the key to which you want to modulate. When you want to modulate, select the copied program, but *continue playing as if you were playing in the key of C.* This will allow for alternate tunings and modulation. You could use a sequencer to send out program changes that select different programs and accomplish automatic modulation, as you continue to play in the fingerings used in the key of C.

Alternate tuning is considered one of the final frontiers of contemporary music-making. Some people feel that purer forms of tuning, such as just intonation, are more beneficial to the mind and body than even-tempered intervals, which are inherently out-of-tune and therefore grate albeit subconsciously on the ear/brain combination. Is this just hype? Or did we really lose an important element of music by adopting the even-tempered scale? Experiment and draw your own conclusions.

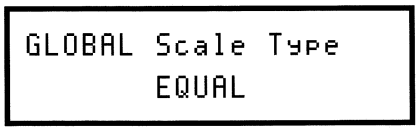
The Midibase Voice Module includes three "standard" alternate tunings as well as two user-settable scales. For more information on alternate tunings, check out the following books:

Lou Harrison's Music Primer (Harrison, Lou; C.F. Peters Corp., 1971)
On the Sensations of Tone (Helmholtz, Herman; Dover, 1954)
Genesis of a Music (Partch, Harry; Da Capo Press, 1974)

There is also a newsletter, "1/1", published by the Just Intonation Network. For more information or a free sample issue, write to JIN, 535 Stevenson St., San Francisco, CA 94103. Finally, the October 1987 issue of *Electronic Musician* magazine was a special issue featuring numerous articles on alternate tuning theory and techniques.

6.2.a Selecting a Preset Tuning Table

1. Press the **GLOBL** master button.
2. Select the **GLOBAL Scale Type** page.



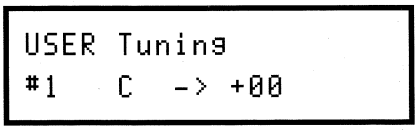
3. Select the desired scale type: EQUAL (even-tempered), JUSTMaj (major scale just intonation), JUSTMin (minor scale just intonation), MEANC (mean tone tuning, key of C), USER1, and USER2 (the latter are user programmed scale; see below).

To hear the difference between just and even-tempered scales, play an interval of a third or sixth with the EQUAL scale type. Now play the same interval using JUSTMaj. It will probably sound out of tune at first, but listen for a while then switch back to EQUAL; this scale will now sound out of tune, because in actuality, the third and sixth are slightly sharp compared to what they should be in theory.

6.2.b Creating Your Own Tuning Tables

You can also create two custom tuning tables for particular ethnic scales, such as Indian ragas.

1. Press the **GLOBL** master button.
2. Select the **USER** Tuning page.



There are three parameters on this page:

(1 or 2)
Selects user scale 1 or 2.

Note (C to B)
This selects the note of the octave to be tuned. The tuning specified in this octave is repeated in other octaves.

Tuning Offset (-99 to +99 cents)
The selected note can be detuned over a range of -99 to +99 cents.

6.2.c Alternate Even-Tempered Tunings

In addition to the options mentioned above, it is possible to set the Midibase Voice Module for a variety of alternate even-tempered

tunings that include different numbers of notes per octave, such as quarter-tone and eighth-tone scales. These types of scales may not push your buttons from a melodic standpoint, but they are very helpful when creating sound effects after all, car crashes and door slams are rarely equal-tempered. On the other hand, a 17-tone scale can be musically useful, assuming you find some comfortable keyboard mapping for it.

The key to this technique is to use Keyboard as the oscillator modulator and scale it appropriately. Make sure that the tuning table is set to EQUAL (section 6.2.a). Here are some possibilities:

1/4 Tone Tuning Set the Kbd amount to -50. Set the Coarse tuning to -14 and Fine to +50 (section 3.4 Osc page 1&2 descriptions).

1/8 Tone Tuning Set the Kbd amount to -75. Set the Coarse tuning to -21 and Fine to +75 (section 3.4 Osc page 1&2 descriptions).

17-Tone Tuning (C3 to F3 covers one octave) Set the Kbd amount to -29. Set the Coarse tuning to -08 and Fine to +17 (section 3.4 Osc page 1&2 descriptions).

Other variations will give other tunings.

6.3 SUPER STEREO EFFECTS

Combis preserve the stereo panning of the patches within the Combi, which allows for some hot stereo effects. To check this out, create two different single patches that play the right and left versions of a sound (*e.g.*, Trumpet L and Trumpet R, with each panned appropriately). Now call up Trumpet L and make it a Combi patch, with Trumpet R being another patch in the Combi. You now have a patch with separate signals in the left and right channels. Try turning on the delay line for one of the sounds, set for 20 to 40 ms. This should spread out the sound even more.

If you don't want to use up two programs, there is a workaround that can get a nice stereo spread from a single program. Call up a program and set it to Combi. Now call up the same program again for the second program of the Combi. If you select the panning parameter, this will affect the base program only and not the second program, allowing you to pan them to opposite sides of the stereo field. You can make any other modifications you want to the base program, set delays, change LFO, etc. The only catch is that if you save the program, the second program will immediately adopt whatever changes you made to the base program. This does work well, though, if you simply want to turn a sound into a wider stereo image: Create a Combi with the two

patches, then set panning and delay as needed when you call up the patch.

Speaking of the delay line, try setting it to a time that falls in with the beat of the music (*e.g.*, a quarter-note delay, or eighth-note triplet) and play one of these stereo patches. The sound will bounce back and forth in stereo, in a rhythmically interesting way.

6.4 BLANK "TEMPLATE" PATCHES

When creating programs from scratch, you can always use an initialized preset. However, you can save time by reserving some programs as template patches (with 500 available programs, you have the space!). These can be "generic" wind, plucked, percussion, and string patches which can serve as a point of departure for related programs. *Example:* The generic wind patch can provide a good foundation for creating sax, clarinet, trumpet, oboe, and similar sounds.

6.5 PROGRAMMING/EDITING IDEAS

Here are some techniques you might want to try to spice up your patches.

Envelope-controlled pitch effects Adding a slight amount of upward pitch bend to wind instrument and vocal patches can increase the realism of the sound.

Using velocity with amplitude and filtering It is often not sufficient to use just velocity to vary the dynamics of a signal. Although this varies the level, with "real-world" instruments timbre usually changes in response to dynamics as well. Having higher velocity values raise the filter cutoff slightly can create a much more realistic effect.

Volume balancing As you develop a set of patches, you'll probably want them to have similar overall volume levels. Usually the easiest way to adjust this is with the signal processor L parameters.

Creative use of the modulation wheel Just because everyone seems to assign the modulation wheel to LFO amount (for vibrato) doesn't mean you have to be normal. Here are some suggestions on creative mod wheel applications.

- *"Ganged" parameters.* Remember that you can modulate lots of different things at once, vibrato rate, tremolo amount, or whatever turns you on by moving the mod wheel.

CHAPTER 7 - MIDI SUPPLEMENT

(This chapter is adapted with permission from *Power Sequencing with Master Tracks Pro/Pro 4* and *The Complete Guide to the Alesis HR-16 and MMT-8*, copyright 1990 and 1989 respectively by AMSCO Publications.)

7.1 MIDI Basics

Most current electronic instruments, including the Midibase Voice Module, contain an internal computer. Computers and music have been working together for decades, which is not surprising considering music's mathematical basis (consider frequencies, harmonics, vibrato rates, tunings, etc.). In the mid 70's, microcomputers became inexpensive enough to be built into consumer-priced musical instruments. They were used for everything from sound generation to storing parameters in memory for later recall.

In 1983, the MIDI (Musical Instrument Digital Interface) specification was introduced to better exploit the computers inside these new musical instruments, primarily to ensure compatibility with equipment from other manufacturers. MIDI expresses musical events (notes played, vibrato, dynamics, tempo, etc.) as common "language" consisting of standardized digital data. This data can be understood by MIDI compatible computers and computer based musical instruments.

Before electronics, music was expressed exclusively as written symbols. By translating musical parameters into digital data, MIDI can express not only the types of musical events written into sheet music, but other parameters as well (such as amount of pitch bend or degree of vibrato).

7.2 MIDI Hardware

MIDI compatible devices usually include both MIDI In and MIDI Out jacks, which terminate in 5 pin "DIN" connectors. The MIDI Out jack transmits MIDI data to another MIDI device. As you play a MIDI controller such as a keyboard, data corresponding to what you play exits the MIDI Out jack.

`Example`: If you play middle C, the MIDI Out transmits a piece of data that says "middle C is down." If you release that key, the MIDI Out transmits another piece of data that says "middle C has been released." If the keyboard responds to the dynamics of your playing, the note data will include dynamics information, too. Moving the modulation wheels and pedals attached to many synthesizers will also

generate data associated with the wheel or pedal being used.

The MIDI In jack receives data from another MIDI device. In addition to the type of performance data described above, rhythmically oriented MIDI devices (e.g., drum machines) can often transmit and/or receive additional MIDI timing messages that keep other rhythmically oriented units in a system synchronized with each other.

An optional MIDI Thru jack provides a duplicate of the signal at the MIDI In jack. This is handy if you want to route MIDI data appearing at one device to another device as well.

Example: Suppose the MIDI Out from the Midibase Splitter Box feeds the Midibase Voice Module's MIDI In. Patching the Midibase Voice Module's MIDI Thru to a second Midibase Voice Module sends the Midibase guitar's MIDI signal "thru" to the second Midibase Voice Module. Thus, playing on the Midibase guitar will trigger both Midibase Voice Modules.

7.3 About Sequencing

The Midibase Voice Module was designed for several applications, including being driven by a sequencer as a multi-timbral sound expander module. To understand this application, it's necessary to look a bit into how sequencing works.

Sequencing, the computerized equivalent of tape recording, is a very common and popular MIDI application. There are two main types of sequencers: dedicated hardware units and software based sequencer programs that run on a computer. At present, only the Atari ST series and the Yamaha C1 computers have built-in MIDI connections, but other computers can hook up to a "black box" called a MIDI Interface, which converts MIDI data into a format the computer can understand. This allows the computer to control a group of MIDI Instruments.

Sequencing takes advantage of the fact that MIDI can correlate exactly to a performance on a MIDI Instrument. Suppose we feed this performance data to a computer's MIDI jack, and load the computer with a program that instructs the computer to remember the order in which data appeared at the MIDI In jack. The computer acts like a recorder, but instead of recording audio, it stores digital data that represents the notes you played, and the exact order in which you played those notes.

If you play a chord, each note in the chord results in a discrete piece of data. These pieces of data, like all MIDI data, are sent serially (*i.e.*, one right after the other). Fortunately, this happens at a very high rate

so that notes played at the same time appear to occur simultaneously, even if a few milliseconds elapse between the first and last notes of the chord.

Once stored in memory, connecting the computer's MIDI Out to the instrument's MIDI In recreates the performance. The principle is the same as a player piano, but instead of having keys triggered by holes in a roll of paper, electronic sounds within the keyboard are triggered by data contained in the computer's memory.
This underscores the importance of a standardized specification, since any MIDI-compatible device can accept data from the computer. If the sequencer says "play middle C," the sound generator will play middle C, regardless of the manufacturer. However, note that not all instruments implement all aspects of the MIDI specification.
Example: Not all instruments send or receive keyboard pressure data.

A keyboard transmitting over channel 2 will stamp all its data as belonging to channel 2. This is particularly helpful when sequencing, since each recorded "track" can be assigned to a unique MIDI channel, and the associated pieces of gear can tune in to a particular track.
Example: If track 1 (set to MIDI channel 1) carries bass and track 2 (set to MIDI channel 2) contains drum data, you would tune a bass sound generator to receive the data on track 1 and the drum machine to receive the data on track 2.

7.4 MIDI Message Basics

There are two main types of MIDI messages. Channel messages, which are channel specific, consist of Voice and Mode messages. System messages, which do not have a channel number and are received by all units in a system, include Common, Real Time, and Exclusive messages.

7.5 Channel Messages

7.5.a Voice messages

A synthesizer's voice is the most basic unit of sound generation. Usually, each voice plays one note at a time, so the number of notes you can play at one time will be limited by the available number of voices. MIDI messages that affect voices include:

Note On Corresponds to a key being pressed down; values range from 000 (lowest note) to 127 (highest note). Middle C is 60.

Note Off Corresponds to a key being released; values are the same as

note on.

Velocity Corresponds to dynamics; values range from 001 (minimum velocity) to 127 (maximum velocity). A velocity of 000 is equivalent to a note-off message.

Pressure Indicates the pressure applied to a keyboard after pressing a key; typically used to introduce vibrato, open a filter, etc. There are two kinds of pressure. Mono (or channel) pressure represents the average pressure of all keys held down, whereas polyphonic pressure sends out data for each individual key being pressed down. The Midibase Voice Module responds to Mono pressure only. Values range from 000 to 127.

Program Change Sending a program change command from a sequencer or other MIDI keyboard can change synth patches automatically. There are 128 program change command numbers.

Pitch Bend This "bends" a note from its standard pitch, which is excellent for creating lead guitar effects. The degree of response to pitch bend sensitivity is adjustable for each Midibase Voice Module program, but to prevent confusion you might want to set them all to the same value.

Continuous Controller Footpedals, breath controllers, and modulation wheels can vary sounds as you play, thus adding expressiveness. MIDI allows for 64 continuous controllers (these act like potentiometers in that you can choose one of many different values) and 58 switch controllers (these choose between two possible states, such as on/off). Each type of controller is stamped with its own controller identification number. Not all controller numbers have been standardized for specific functions, but the following indicates the current list of assigned controllers.

Numbers in parenthesis indicate the controller range.

1 Modulation Wheel (0-127)
2 Breath Controller (0-127)
3 Early DX7 Aftertouch (0-127)
4 Foot Controller (0-127)
5 Portamento Time (0-127)
6 Data Slider (0-127)
7 Main Volume (0-127)
8 Balance (0-127)
10 Pan (0-127)
11 Expression (0-127)
69 Hold 2 (0 or 127)
80 General Purpose #5 (0 or 127)
81 General Purpose #6 (0 or 127)
82 General Purpose #7 (0 or 127)
83 General Purpose #8 (0 or 127)
92 Tremolo Depth (0-127)
93 Chorus Depth (0-127)
94 Celeste Depth (0-127)
95 Phase Depth (0-127)
96 Data Increment (0 or 127)

16 General Purpose #1 (0-127)
17 General Purpose #2 (0-127)
18 General Purpose #3 (0-127)
19 General Purpose #4 (0-127)
32-63 Least Significant Bits, Controllers 0-31 (0-127; not often used and therefore not accessible from the Midibase)
64 Sustain Pedal (0 or 127)
65 Portamento On/Off (0 or 127)
66 Sustenuto Pedal (0 or 127)
67 Soft Pedal (0 or 127)
97 Data Decrement (0 or 127)
98 Non-Registered Parameter MSB (0-127)
99 Non-Registered Parameter LSB (0-127)
100 Registered Parameter MSB (0-127)
101 Registered Parameter LSB (0-127)
121 Reset All Controllers (0)
122 Local Control On/Off (0 or 127)
123 All Notes Off (0)
124 Omni Off (0), 125 Omni On (0)
126 Mono On (0-16; 0^5 Omni Off)
127 Poly On (0)

7.5.b Mode Messages

There are two messages that determine the MIDI mode (*i.e.*, how devices will receive MIDI data). The "omni" message determines how many channels will be recognized. Omni on means that the data from all channels will be received; Omni off limits the number of channels, usually to one.

The "mono/poly" message deals with voice assignment within the synthesizer. In Mono mode, only one note at a time plays in response to voice messages; in Poly mode, as many voices can play notes as are available to play notes.

Using these two messages in various combinations produces the following mode messages.

Omni On/Poly (Mode 1) The synthesizer's voices respond to voice messages occurring on any channel.

Omni On/Mono (Mode 2) This mode is seldom implemented because playing one note out of the data occurring on all 16 channels is not very useful.

Omni Off/Poly (Mode 3) In this extremely common mode, the Midibase Voice Module is tuned to a single channel; any incoming messages are assigned to synth voices, up to the maximum number 16 voices.

Omni Off/Mono (Mode 4) Voice messages are received over several channels, but each channel plays monophonically. In other words, you could play one voice on channel 1, one voice on channel 2, etc. The Midibase Voice Module implements an improved version of Mono

mode called dynamic allocation, which lets the synth receive polyphonic data over each channel.

7.5.c Other Messages

Local Control On/Off This is used with keyboards that also include built in sound generators. With Local Control on, playing the keyboard triggers the internal voices and sends data out the MIDI Out jack. With Local Control off, the controller data does not trigger the internal voices, but does send data out MIDI Out. The Instruments window allows you to send Local Control off/on messages directly from beyond. The main use for Local Off is to play an expander module from a master keyboard, but not trigger the internal sounds.
All Notes Off This command, if recognized by the receiver, will turn off any "stuck" notes. These usually occur when a device receives a note on message, but for whatever reason (e.g., someone tripping over a patch cord) doesn't receive the corresponding note off command.

7.6 System Common Messages

Intended for all units in a system, some of these messages are:

Song Position Pointer This indicates how many "MIDI beats" (normally a 16th note) have elapsed since a piece started (up to 16,384 total beats). It is primarily used to allow different sequencers and drum machines to auto locate to each other so that if you start one sequencer, the other device will automatically jump to the same place in the song, whereupon both continue together.

System Exclusive This message (called **sys ex** for short) is considered "exclusive" because different manufacturers send and receive data over MIDI which is intended only for that manufacturer's equipment. Example: Sending a Peavey Midibase Voice Module message to an Ensoniq EPS won't do anything, but will be understood by other Midibase Voice Modules. This data often contains information about individual instrument patches; some sequencers can record sys ex data in track, then send it out to re-configure an instrument's patch settings.

Timing Clock The master tempo source (such as a sequencer) emits

24 timing messages per quarter note. Each device synchronized to the sequencer advances by $^1/_{24}$ of a quarter note when it receives the clock message, thus keeping units in sync after they've both started at the same time.

Start Signals all rhythmically-based units when to start playing.

Stop Signals all rhythmically-based units when to stop playing.

Continue Unlike a Start command, which re-starts a sequencer or drum machine from the beginning of a song each time it occurs, sending a continue message after stop will re-start units from where they were stopped.

7.7 Books On MIDI

The preceding does not substitute for reading a good book on the subject of MIDI. For further information, refer to the following:

MIDI For Musicians and *The Electronic Musician's Dictionary* by Craig Anderton; AMSCO Publications. The former was written specifically for musicians with no background in MIDI, and the latter defines terms related to musical electronics.

Music Through MIDI by Michael Boom; Microsoft Press. An excellent text for those just getting started with MIDI, synthesis, and related topics.

The Murphy's Law MIDI Book by Jeff Burger; Alexander Publishing. Emphasizes applications and problem solving.

Using MIDI by Helen Casabona and David Frederick; Alfred Publishing. A general guide to MIDI with an emphasis on applications.

Understanding MIDI and *Understanding MIDI 2* by various authors; Amordian Press. A collection of MIDI oriented articles from Musician magazine.

These are available from many music and book stores; a mail order source is Mix Bookshelf (800/233-9604).

APPENDIX A

Midibase guitar/voice module System Exclusive Command Formats

System Exclusive Header:

F0	System Exclusive Command Byte
00 00 1B	Peavey System Exclusive I.D.
02	Keyboard Family I.D.
04	Midibase guitar/voice module I.D.
<CH>	MIDI In Channel
<CMD>	Command Byte
<DATA1>..<DATAnn>	Data Bytes (If applicable)
F7	End of System Exclusive

System Exclusive Commands:

Receive Programs:

<Header>	System Exclusive Header
00	Receive Programs Commands
<Data1>	Program Number in Current Bank
<Data2> - <DataNN>	Nibble-ized Program Data

Dump Programs:

<Header>	System Exclusive Header
01	Dump Programs Command
<Data1>	Program Number in Current Bank Prog #127 -> dumps all 299 internal programs

Receive Global Data:

<Header>	System Exlusive Header
02	Receive Global Data Command
<Data1>..<DataNN>	Global Data

Dump Global Data:

<Header>	System Exclusive Header
03	Dump Global Data Command

Receive Drum Kit Data:

<Header>	System Exclusive Header
04	Receive Drum Kit Data Command
<Data1>..<DataNN>	Drum Kit Data

Dump Drum Kit Data:

<Header>	System Exclusive Header
05	Dump Drum Kit Data Command

***System Exclusive Commands:* cont.**

Change Bank Command:

<Header>	System Exclusive Header
06	Change Program Bank Command
<Data1>	Bank Number 0-2

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Note: This is the system exclusive implementation of the Bank Select Command implemented for SysEx Librarian Devices that can only accommodate System Exclusive messages in their buffers.

Midibase Guitar and Voice Module program Block Structures

The following is a table of program block offsets for the Midibase guitar/voice module. If the user requests a program dump, the Midibase guitar/voice module dumps a Program block of 152 bytes (98H) in a nibble-ized format, making a single program dump to be of (152 bytes *2 nibbles) + 8 SysEx header bytes + 1 EOX byte. The Midibase guitar/voice module program block structure is as follows:

Variable Name	Offset	Description	Range
ProgName	0-12	Name of program - up to 13 ASCII characters	
Reserved	13-14	2 Reserved program bytes	
OscWave	15	Osc Waveshape	0 to 109
OscCoarse	16	Coarse Tuning Offset	-24 to 24
Osc Fine	17	Oscillator Fine Tuning	-99 to 99
OscKbdTrk	18	Sens to Keyboard Modulation	-99 to 99
PenvSens	19	Sens to Pitch Envelope	-99 to 99
LfoSens	20	Sens to LFO	-99 to 99
PEnvVSens	21	Pitch Env Level Velocity Sens	-99 to 99
PEnvKSens	22	Pitch Env Level Key Position Sens	-99 to 99
PRateVelSens	23	Pitch Env Rate Velocity Sens	-99 to 99
PRateKbdSens	24	Pitch Env Rate Key Position Sens	-99 to 99
PEnvLevs	25-29	Five Pitch Env Levels	0 to 99
PEnvRates	30-33	Four Pitch Env Rates	0 to 99
Cutoff	34	Programmed Filter Cutoff	0 to 99
Res	35	Programmed Filter Resonance	0 to 99
FilKbdTrk	36	Filter Keyboard Tracking Amount	-99 to 99
FEnvSens	37	Filter Envelope Sensitivity	-99 to 99
FLfoSens	38	Filter Lfo Sensitivity	-99 to 99
FEnvVSens	39	Filter Env Amount Velocity Mod	-99 to 99
FEnvKSens	40	Filter Env Amount Keyboard Mod	-99 to 99
FRateVelSens	41	Filter Env Rate Velocity Mod	-99 to 99
FRateKbdSens	42	Filter Env Rate Keyboard Mod	-99 to 99
FEnvLevs	43-47	Five Filter Env Levels	0 to 99
FEnvRates	48-51	Four Filter Env Rates	0 to 99
AmpEnvVSens	52	Amp Env Amount Velocity Mod	-99 to 99
AmpEnvKSens	53	Amp Env Amount Keyboard Mod	-99 to 99
RateVelSens	54	Amp Env Rate Velocity Mod	-99 to 99
RateKbdSens	55	Amp Env Rate Keyboard Mod	-99 to 99
AmpEnvLevs	56-59	Four Amp Env Levels	0 to 99
AmpEnvRates	60-63	Four Amp Env Rates	0 to 99
LfoRate	64	LFO Programmed Rate	0 to 99
LfoShape	65	LFO Programmed Shape	0 to 4
LfoAmount	66	LFO Programmed Amount	0 to 99
LfoFadeIn	67	LFO Fade In Rate	0 to 99
AmtWhlSens	68	LFO Amount Wheel Sensitivity	-99 to 99
RateWhlSens	69	LFO Rate Wheel Sensitivity	-99 to 99

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Variable Name	Offset	Description	Range
Volume	70	Programmed Volume	0 to 99
Pan	71	Programmed Pan Location	-99 to 99
PanKbdSens	72	Pan Keyboard Mod Amount	-99 to 99
PanLfoSens	73	Pan LFO Mod Amount	-99 to 99
BendRange	74	Pitch Bend Range	0 to 7
ProgType	75	SINGLE or COMBI Patch Flag	0 to 1
M1KeyLow	76	Base Prog Low Key Response	0 to 127
M1KeyHi	77	Base Prog High Key Response	0 to 127
M1VelLow	78	Base Prog Low Vel Response	0 to 127
M1VelHi	79	Base Prog High Vel Response	0 to 127
M1Volume	80	Base Prog Volume Scalar	0 to 99
M1Tpose	81	Base Prog Transpose Value	-24 to 24
M1Delay	82	Base Prog Delay Start	0 to 99
M1Detune	83	Base Prog Detune	-99 to 99
M1Spares	84-85	2 spares	
M2KeyLow	86	Link #2 Prog Low Key Response	0 to 127
M2KeyHi	87	Link #2 Prog High Key Response	0 to 127
M2VelLow	88	Link #2 Prog Low Velocity Res	0 to 127
M2VelHi	89	Link #2 Prog High Velocity Res	0 to 127
M2Volume	90	Link #2 Prog Volume Scalar	0 to 99
M2Tpose	91	Link #2 Prog Transpose Value	-24 to 24
M2Delay	92	Link #2 Prog Delay Start	0 to 99
M2Detune	93	Link #2 Porg Detune	-99 to 99
M2Prognum	94-95	Link #2 Program Number	0 to 299
M3KeyLow	96	Link #3 Prog Low Key Response	0 to 127
M3KeyHi	97	Link #3 Prog High Key Response	0 to 127
M3VelLow	98	Link #3 Prog Low Velocity Res	0 to 127
M3VelHi	99	Link #3 Prog High Velocity Res	0 to 127
M3Volume	100	Link #3 Prog Volume Scalar	0 to 99
M3Tpose	101	Link #3 Prog Transpose Value	-24 to 24
M3Delay	102	Link #3 Prog Delay Start	0 to 99
M3Detune	103	Link #3 Porg Detune	-99 to 99
M3Prognum	104-105	Link #3 Program Number	0 to 299
M4KeyLow	106	Link #4 Prog Low Key Response	0 to 127
M4KeyHi	107	Link #4 Prog High Key Response	0 to 127
M4VelLow	108	Link #4 Prog Low Velocity Res	0 to 127
M4VelHi	109	Link #4 Prog High Velocity Res	0 to 127
M4Volume	110	Link #4 Prog Volume Scalar	0 to 99
M4Tpose	111	Link #4 Prog Transpose Value	-24 to 24
M4Delay	112	Link #4 Prog Delay Start	0 to 99
M4Detune	113	Link #4 Porg Detune	-99 to 99
M4Prognum	114-115	Link #4 Program Number	0 to 299
LPrsSens	116	LFO Amt Pressure Res (V2 only)	-99 to 99
FprsSens	117	Filter Cut Pressure Res (V2 only)	-99 to 99
AnalogSpares	118-119	Spares (Reserved)	
Effect	120	Effect Combination	0 to 39
FxConfig	121	Effect Combination	0 to 2
WetLevFx1	122	Effect #1 Mix	0 to 100
WetLevFx2	123	Effect #2 Mix	0 to 100
OutLevFx1	124	Output Level Effect #1	0 to 99
OutLevFx2	125	Output Level Effect #2	0 to 99

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Variable Name	Offset	Description	Range
RevType	126	Reverb Type	0 to 2
RevSize	127	Reverb Size	0 to 4
RevDamp	128	Reverb HF Damping	0 to 6
RevTime	129	Reverb Time	0 to 103
DelTimeL	130	Delay Time Left	0 to 99
DelTimeR	131	Delay Time Right	0 to 99
DelFdbk	132	Delay Feedback	0 to 99
ChoDelTime	133	Chorus Delay Time	0 to 49
ChoRate	134	Chorus Rate	0 to 99
ChoDepth	135	Chorus Depth	0 to 99
ChoFdbk	136	Chorus Feedback	0 to 99
EqLowFreq	137	EQ Low Band	0 to 6
EqLowGain	138	EQ Low Boost	-12 to 12
EqHiFreq	139	EQ High Band	0 to 6
EqHiGain	140	EQ High Boost	-12 to 12
GateType	141	Gate Type	0 to 2
GateTime	142	Gate Density	0 to 9
DistType	143	Distortion Amount	0 to 7
Variable Name	Offset	Description	
Range			
Emphasis	144	Exciter Emphasis Point	0 to 9
Contour	145	Contour	-100 to 100
FxSpares6	146-151	Spare Bytes	

Midibase guitar/voice module Drum Kit Data Formats

Midibase guitar/voice module Kits are saved in a memory block of 1920 bytes in Non Volatile RAM. Each instrument in the Midibase guitar/voice module drumkit has 6 programmable parameters associated with it. Each drumkit contains 32 pieces, and each Midibase guitar/voice module contains 10 drumkits. The structure of each drum piece in memory is as follows:

Drum Piece Variable	Offset	Description	Range
Wave	0	Wave Assignment for Piece	0 to 104
Top Key	1	Assigned Top Piece Key	0 to 127
Tune	2	Tuning value for Piece	-36 to 36
Decay	3	Amp Env Decay Time	0 to 99
Pan	4	Pan Position	-99 to 99
Level	5	Piece Level Scalar	0 to 99

Midibase guitar/voice module Global Data Format

Midibase guitar/voice module Global data is saved in a memory block of **nn** bytes in Non Voliatile RAM. The structure of the Global variables in memory is as follows:

Drum Piece Variable	Offset	Description	Range
MIDI Mode	0	MIDI Receive Mode	0 to 5
MIDI In Channel	1	MIDI Input Channel	0 to 15
MIDI Overflow	2	Overflow Off/On Flag	0 to 1

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Drum Piece Variable	Offset	Description	Range
MIDI Out Channel	3	MIDI Output Channel	0 to 15
MIDI Configuration0	4	in guitar - SysEx Recv/Ignore	0 or 2
		in vm - Ignore enable flags - In Order: - SysEx, Volume, ProgChange, Sustain, Pressure, PWheel, MWheel AllOff	
MIDI Configuration1	5	in guitar and vm Spare	
MIDI Configuration2	6	in vm - Spare	
		in guitar Volume Filter	0 to 3
MIDI Configuration3	7	in vm - Spare	
		in guitar Prog Change Filter	0 to 3
MIDI Configuration4	8	in vm - Spare	
		in guitar Sustain Filter	0 to 3
MIDI Configuration5	9	in vm - Spare	
		in guitar Pressure Filter	0 to 3
MIDI Configuration6	10	in vm - Spare	
		in guitar Pitch Whl Filter	0 to 3
MIDI Configuration7	11	in vm - Spare	
		in guitar Mod Whl Filter	0 to 3
MIDI Configuration8	12	in vm - Spare	
		in guitar All Notes Off Filter	0 to 3
Middle C	13	MIDI Transpose Offset	-36 to 36
Master Fine Tune	14	Tuning Offset in Cents	-99 to 99
Velocity Response Curve	15	Global Velocity response	0 to 2
Spares	16-17	Spare Value	
Multi Setup #1 Prog	18-49	16 Words for Each Program #	0(off)- 500
	Assignments:	Assigned to a MIDI Channel	
Multi Setup #1 Volumes	50-65	16 bytes for each Channel Vol	0 - 127
Multi Setup #2 Prog	66-97	16 Words for Each Program #	0(off)- 500
	Assignments:	Assigned to a MIDI Channel	
Multi Setup #2 Volumes	98-113	16 bytes for each Channel Vol	0 - 127
Multi Setup #3 Prog	114-145	16 Words for Each Program #	0(off)- 500
	Assignments:	Assigned to a MIDI Channel	
Multi Setup #3 Volumes	146-161	16 bytes for each Channel Vol	0 - 127
Multi Setup #4 Prog	162-193	16 Words for Each Program #	0(off)- 500
	Assignments:	Assigned to a MIDI Channel	
Multi Setup #4 Volumes	194-209	16 bytes for each Channel Vol	0 - 127
Multi Pointers	210-273	16 Longword pointer to current multi setup programs, calculated upon receive of global data dump, otherwise, reserved	
Effect Bypass	274	Flag for Effects Bypassed	0 to 1
ViewAngle	275	View Angle value	Reserved
MemProtect	276	Memory Protect Flag	0, Off-1,On
ScaleType	277	User Selected Scale Type	0 to 5
Footswitch #1Function	278	(reserved in V2)	0 to 1
Footswitch #2Function	279	(reserved in V2)	0 to 1
Ftsw#1Polarity	280	(reserved in V2)	0 to 1
Ftsw#2Polarity	281	(reserved in V2)	0 to 1
	UserOffsets1	282-293 12 Fine Tune Offsets for User Tuning #1	-99 to 99
UserOffsets2	294-305	12 Fine Tune Offsets for User Tuning #2	-99 to 99
Program Xref	306-563	Word 1 - Program Chg Xref Enabled or Disabled	0 to 1
		Word 2 - 128 Program #'s to be Xreff'ed	0 to 499

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Midibase™

Voice Module

IMPORTANT SAFETY INSTRUCTIONS

WARNING When using electric products, basic cautions should always be followed, including the following.

1. Read all safety and operating instructions before using this product.
2. All safety and operating instructions should be retained for future reference.
3. Obey all cautions in the operating instructions and on the back of the unit.
4. All operating instructions should be followed.
5. This product should not be used near water, i.e., a bathtub, sink, swimming pool, wet basement, etc.
6. This product should be located so that its position does no interfere with its proper ventilation. It should not be placed flat against a wall or placed in a built-in enclosure that will impede the flow of cooling air.
7. This product should not be placed near a source of heat such as a stove, radiator, or another heat producing amplifier.
8. Connect only to a power supply of the type marked on the unit adjacent to the power supply cord.
9. Never break off the ground pin on the power supply cord. For more information on grounding, write for our free booklet "Shock Hazard and Grounding."
10. Power supply cords should always be handled carefully. Never walk or place equipment on power supply cords. Periodically check cords for cuts or signs of stress, especially at the plug and the point where the cord exits the unit.
11. The power supply cord should be unplugged when the unit is to be unused for long periods of time.
12. If this product is to be mounted in an equipment rack, rear support should be provided.
13. Metal parts can be cleaned with a damp rag. The vinyl covering used on some units can be cleaned with a damp rag, or an ammonia-based household cleaner if necessary. Disconnect unit from power supply before cleaning.
14. Care should be taken so that objects do not fall and liquids are not spilled into the unit through the ventilation holes or any other openings.
15. This unit should be checked by a qualified service technician if
    a. The power supply cord or plug has been damaged.
    b. Anything has fallen or been spilled into the unit.
    c. The unit does not operate correctly.
    d. The unit has been dropped or the enclosure damaged.
16. The user should not attempt to service this equipment. All service work should be done by a qualified service technician.
17. This product should be used only with a cart or stand that is recommended by Peavey Electronics.
18. Exposure to extremely high noise levels may cause a permanent hearing loss. Individuals vary considerably in susceptibility to noise induced hearing loss, but neary everyone will lose some hearing if exposed to sufficiently intense noise for a sufficient time.

    The U.S. Government's Occupational Safety and Health Administration (OSHA) has specified the following permissible noise level exposures.

Duration Per Day In Hours	Sound Level dBA, Slow Response
8	90
6	92
4	95
3	97
2	100
1½	102
1	105
½	110
¼ or less	115

According to OSHA, any exposure in excess of the above permissible limits could result in some hearing loss.

Ear plugs or protectors in the ear canals or over the ears must be worn when operating this amplification system in order to prevent a permanent hearing loss if exposure is in excess of the limits as set forth above. To ensure against potentially dangerous exposure to high sound pressure levels, it is recommended that all persons exposed to equipment capable of producing high sound pressure levels such as this amplification system be protected by hearing protectors while this unit is in operation.

SAVE THESE INSTRUCTIONS

THIS LIMITED WARRANTY VALID ONLY WHEN PURCHASED AND REGISTERED IN THE UNITED STATES OR CANADA. ALL EXPORTED PRODUCTS ARE SUBJECT TO WARRANTY AND SERVICES TO BE SPECIFIED AND PROVIDED BY THE AUTHORIZED DISTRIBUTOR FOR EACH COUNTRY.
Ces clauses de garantie ne sont vaiables qu'aux Etats-Unis et au Canada. Dans tour les autres pays, les clauses de garantie et de maintenance sont fixees par le distributeur national et assuree par lul seion la legislation envigueur.
Diese Garantie ist nur in den USA and Kanada gultig. Alle Export-Produkte sind der Garantie und dem Service des Importeurs des jewelligen Landes unterworfen.
Esta garantia es valida solamente cuando el producto es comprado en E.U. continentales o en Canada. Todos los productos que sean comprados en el extranjero, estan sujetos a las garantias y servicio que cada distribuidor autorizado determine y ofrezca en los diferentes paises.

PEAVEY ONE-YEAR LIMITED WARRANTY/REMEDY

PEAVEY ELECTRONICS CORPORATION ("PEAVEY") warrants this product, EXCEPT for covers, footswitches, patchcords, tubes and meters, to be free from defects in material and workmanship for a period of one (1) year from date of purchase, PROVIDED, however, that this limited warranty is extended only to the original retail purchaser and is subject to the conditions, exclusions, and limitations hereinafter set forth:

PEAVEY 90-DAY LIMITED WARRANTY ON TUBES AND METERS

If this product contains tubes or meters, Peavey warrants the tubes or meters contained in the product to be free from defects in material and workmanship for a period of ninety (90) days from date of purchase; PROVIDED, however, that this limited warranty is extended only to the original retail purchaser and is also subject to the conditions, exclusions, and limitations hereinafter set forth.

CONDITIONS, EXCLUSIONS, AND LIMITATIONS OF LIMITED WARRANTIES

These limited warranties shall be void and of no effect, if:

a. The first purchase of the product is for the purpose of resale; or
b. The original retail purchase is not made from an AUTHORIZED PEAVEY DEALER; or
c. The product has been damaged by accident or unreasonable use, neglect, improper service or maintenance, or other causes not arising out of defects in material or workmanship; or
d. The serial number affixed to the product is altered, defaced, or removed.

In the event of a defect in material and/or workmanship covered by this limited warranty, Peavey will:

a. In the case of tubes or meters, replace the defective component without charge.
b. In other covered cases (i.e., cases involving anything other than covers, footswitches, patchcords, tubes or meters), repair the defect in material or workmanship or replace the product, at Peavey's option;
and provided, however, that, in any case, all costs of shipping, if necessary, are paid by you, the purchaser.

THE WARRANTY REGISTRATION CARD SHOULD BE ACCURATELY COMPLETED AND MAILED TO AND RECEIVED BY PEAVEY WITHIN FOURTEEN (14) DAYS FROM THE DATE OF YOUR PURCHASE.

In order to obtain service under these warranties, you must:

a. Bring the defective item to any PEAVEY AUTHORIZED DEALER or AUTHORIZED PEAVEY SERVICE CENTER and present therewith the ORIGINAL PROOF OF PURCHASE supplied to you by the AUTHORIZED PEAVEY DEALER in connection with your purchase from him of this product.
If the DEALER or SERVICE CENTER is unable to provide the necessary warranty service you will be directed to the nearest other PEAVEY AUTHORIZED DEALER or AUTHORIZED PEAVEY SERVICE CENTER which can provide such service.

OR

b. Ship the defective item, prepaid, to:

PEAVEY ELECTRONICS CORPORATION
International Service Center
Highway 80 East
MERIDIAN, MS 39301

including therewith a complete, detailed description of the problem, together with a legible copy of the original PROOF OF PURCHASE and a complete return address. Upon Peavey's receipt of these items:
If the defect is remedial under these limited warranties and the other terms and conditions expressed herein have been complied with, Peavey will provide the necessary warranty service to repair or replace the product and will return it, FREIGHT COLLECT, to you, the purchaser.

Peavey's liability to the purchaser for damages from any cause whatsoever and regardless of the form of action, including negligence, is limited to the actual damages up to the greater of $500.00 or an amount equal to the purchase price of the product that caused the damage or that is the subject of or is directly related to the cause of action. Such purchase price will be that in effect for the specific product when the cause of action arose. This limitation of liability will not apply to claims for personal injury or damage to real property or tangible personal property allegedly caused by Peavey's negligence. Peavey does not assume liability for personal injury or property damage arising out of or caused by a non-Peavey alteration or attachment, nor does Peavey assume any responsbility for damage to interconnected non-Peavey equipment that may result from the normal functioning and maintenance of the Peavey equipment.

UNDER NO CIRCUMSTANCES WILL PEAVEY BE LIABLE FOR ANY LOST PROFITS, LOST SAVINGS, ANY INCIDENTAL DAMAGES, OR ANY CONSEQUENTIAL DAMAGES ARISING OUT OF THE USE OR INABILITY TO USE THE PRODUCT, EVEN IF PEAVEY HAS BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

THESE LIMITED WARRANTIES ARE IN LIEU OF ANY AND ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR USE; PROVIDED, HOWEVER, THAT IF THE OTHER TERMS AND CONDITIONS NECESSARY TO THE EXISTENCE OF THE EXPRESSED, LIMITED WARRANTIES, AS HEREINABOVE STATED, HAVE BEEN COMPLIED WITH, IMPLIED WARRANTIES ARE NOT DISCLAIMED DURING THE APPLICABLE ONE-YEAR OR NINETY-DAY PERIOD FROM DATE OF PURCHASE OF THIS PRODUCT.

SOME STATES DO NOT ALLOW LIMITATION ON HOW LONG AN IMPLIED WARRANTY LASTS, OR THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATIONS OR EXCLUSIONS MAY NOT APPLY TO YOU. THESE LIMITED WARRANTIES GIVE YOU SPECIFIC LEGAL RIGHTS, AND YOU MAY ALSO HAVE OTHER RIGHTS WHICH MAY VARY FROM STATE TO STATE.

THESE LIMITED WARRANTIES ARE THE ONLY EXPRESSED WARRANTIES ON THIS PRODUCT, AND NO OTHER STATEMENT, REPRESENTATION, WARRANTY, OR AGREEMENT BY ANY PERSON SHALL BE VALID OR BINDING UPON PEAVEY.

In the event of any modification or disclaimer of expressed or implied warranties, or any limitation of remedies, contained herein conflicts with applicable law, then such modification, disclaimer or limitation, as the case may be, shall be deemed to be modified to the extent necessary to comply with such law.

Your remedies for breach of these warranties are limited to those remedies provided herein and Peavey Electronics Corporation gives this limited warranty only with respect to equipment purchased in the United States of America.

INSTRUCTIONS — WARRANTY REGISTRATION CARD

1. Mail the completed WARRANTY REGISTRATION CARD to:

PEAVEY ELECTRONICS CORPORATION
POST OFFICE BOX 2898
MERIDIAN, MISSISSIPPI 39302-2898

   a. Keep the PROOF OF PURCHASE. In the event warranty service is required during the warranty period, you will need this document. **There will be no identification card issued by Peavey Electronics Corporation.**
2. IMPORTANCE OF WARRANTY REGISTRATION CARDS AND NOTIFICATION OF CHANGES OF ADDRESSES:
   a. Completion and mailing of WARRANTY REGISTRATION CARDS — Should notification become necessary for any condition that may require correction, the REGISTRATION CARD will help ensure that you are contacted and properly notified.
   b. Notice of address changes — If you move from the address shown on the WARRANTY REGISTRATION CARD, you should notify Peavey of the change of address so as to facilitate your receipt of any bulletins or other forms of notification which may become necessary in connection with any condition that may require dissemination of information or correction.
3. You may contact Peavey directly by telephoning (601) 483-5365.

NOTES

Features and specifications subject to change without notice.

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#80301683

Printed in U.S.A. 9/92